A
GEOMETRICALL
EXTRACTION.
1648.

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321
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A Geometricall Extraction for all affected to the Mathematickes.

With sundry strange conclusions both by instrument and without, and also by Perspectiue glasses, to set forth the true discription or exact plat of a Whole Region pleasant and full of delight in practis. Also, most profitable to all Surueighers, or others that are desirous to make any Inclosure.

With a treaty of Fortifications as well regularly as Irregularly

by

John Darker

1648

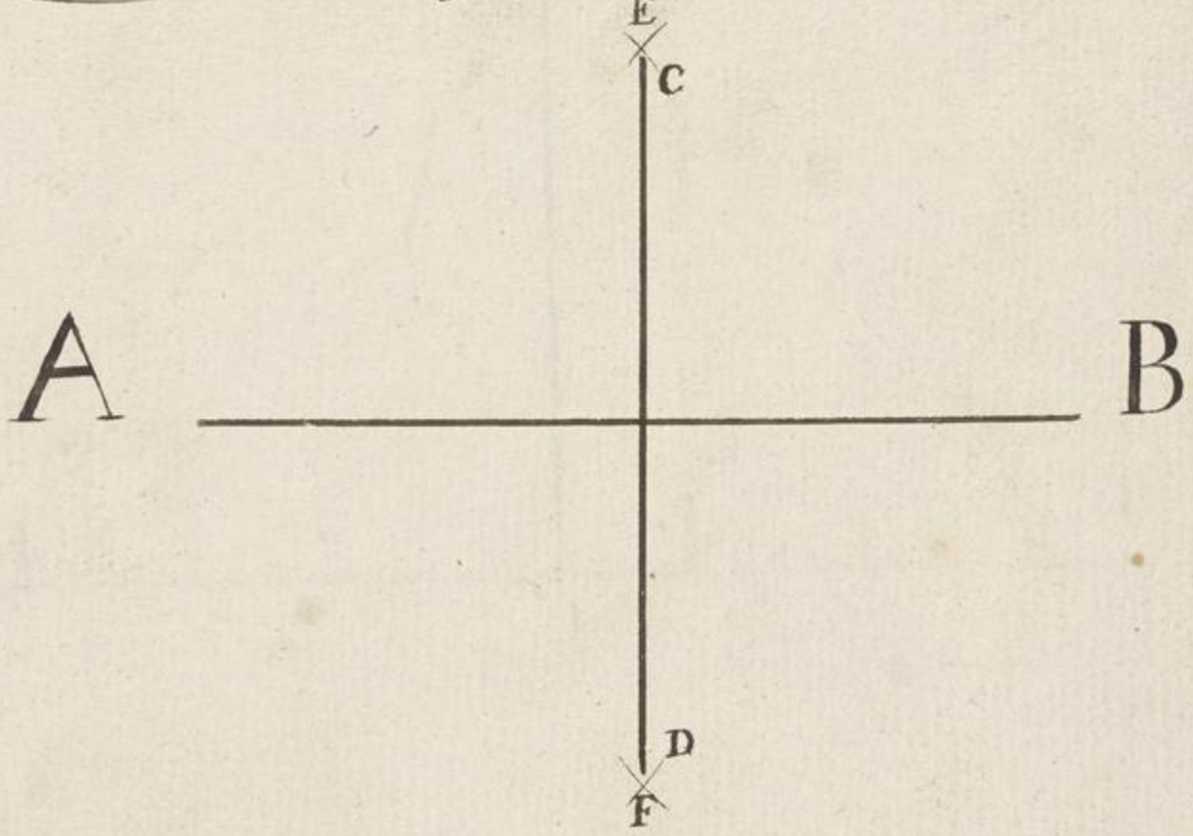
Jacob Bsinsor 1667 8/12 3

LEVINGTON THIS XXth. OF MARCH. MDCXLVIII.

Probleme. 1.

To Deuide a line giuen into two equall parts at right angles.

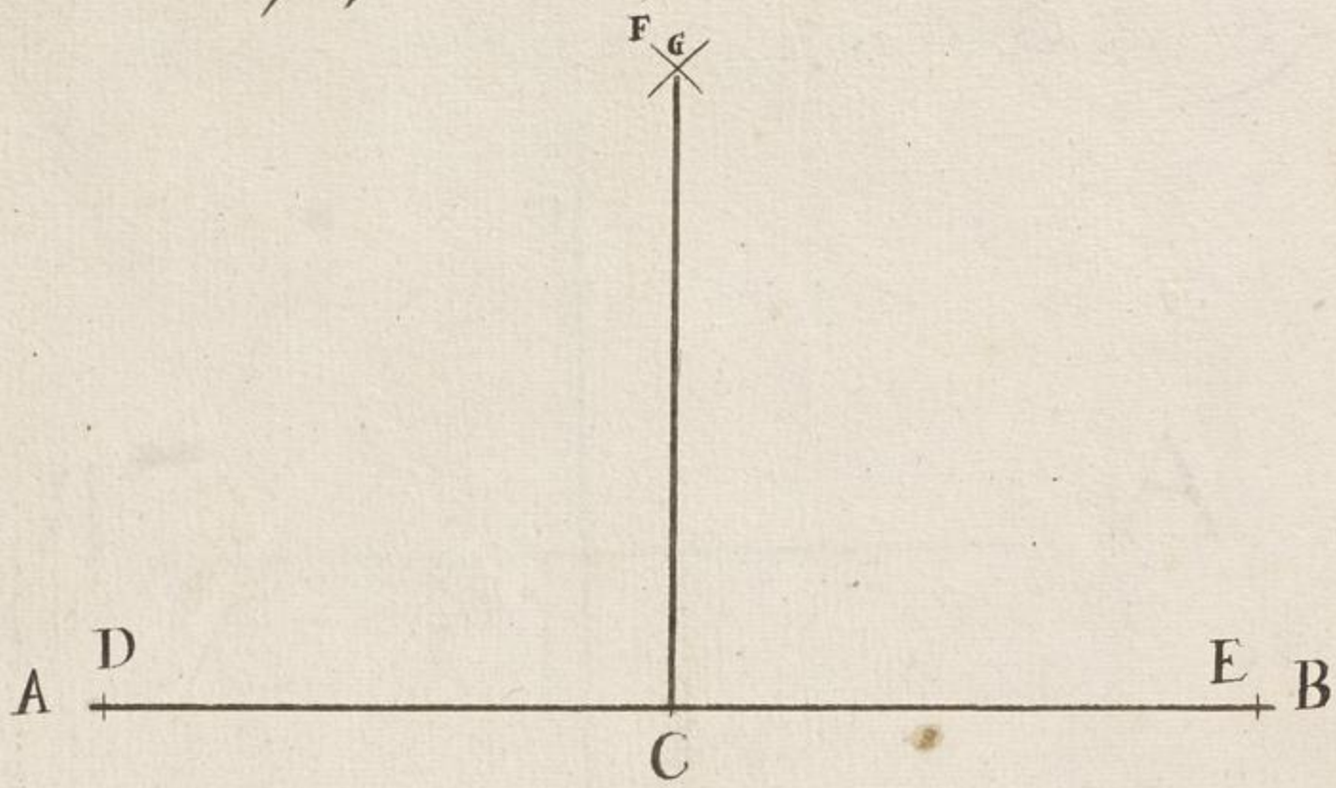
Let A. B. be a line giuen to be soe deuided.



first set one futt in the end A. and opening the other foot at pleasure to aboue halfe the line A. B. make the arches A & D. aboue & belowe, then with the same Distance settinge one foot in the other end B. Crosse those arches in C & F. Lastly drawe the line C F. which shall deuide the line A B into two equall parts in E as was required.

Prob: 2.

Let A B be a line giuen, and let C be a point assigned therein, whereuppon it is required. to erect a perpendicular:/

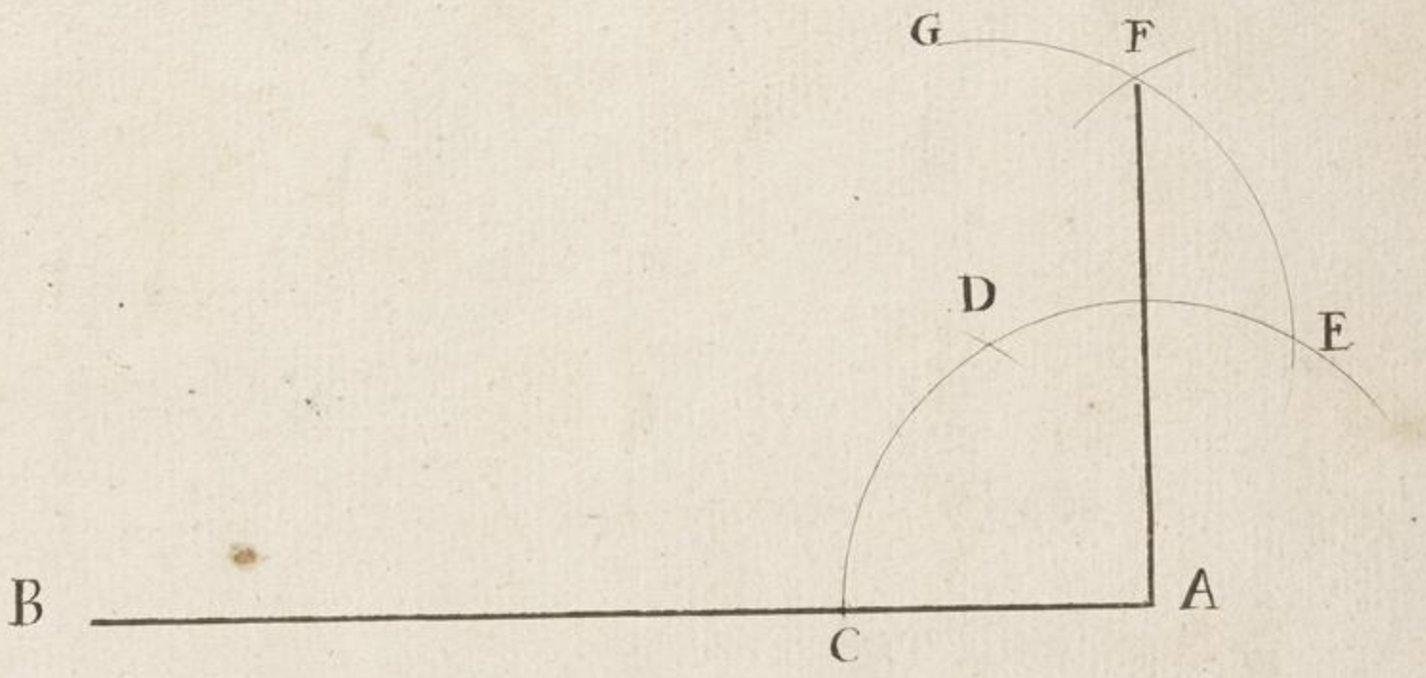


first set one foot in the point C and open the other foot to almost the nerest end A and make the point D & E. on each side the point C That done set one foot in D. and open the other foot at pleasure to some wider distance and make ouer head the arck ff. Then wth the same distance settinge one foot in E crossē the said arck in G. Lastly drawē the line G C. which shall bee a perpendicular to A B upon the point C required./

Prob: 3./

To erect a perpendicular uppon the end of a line./

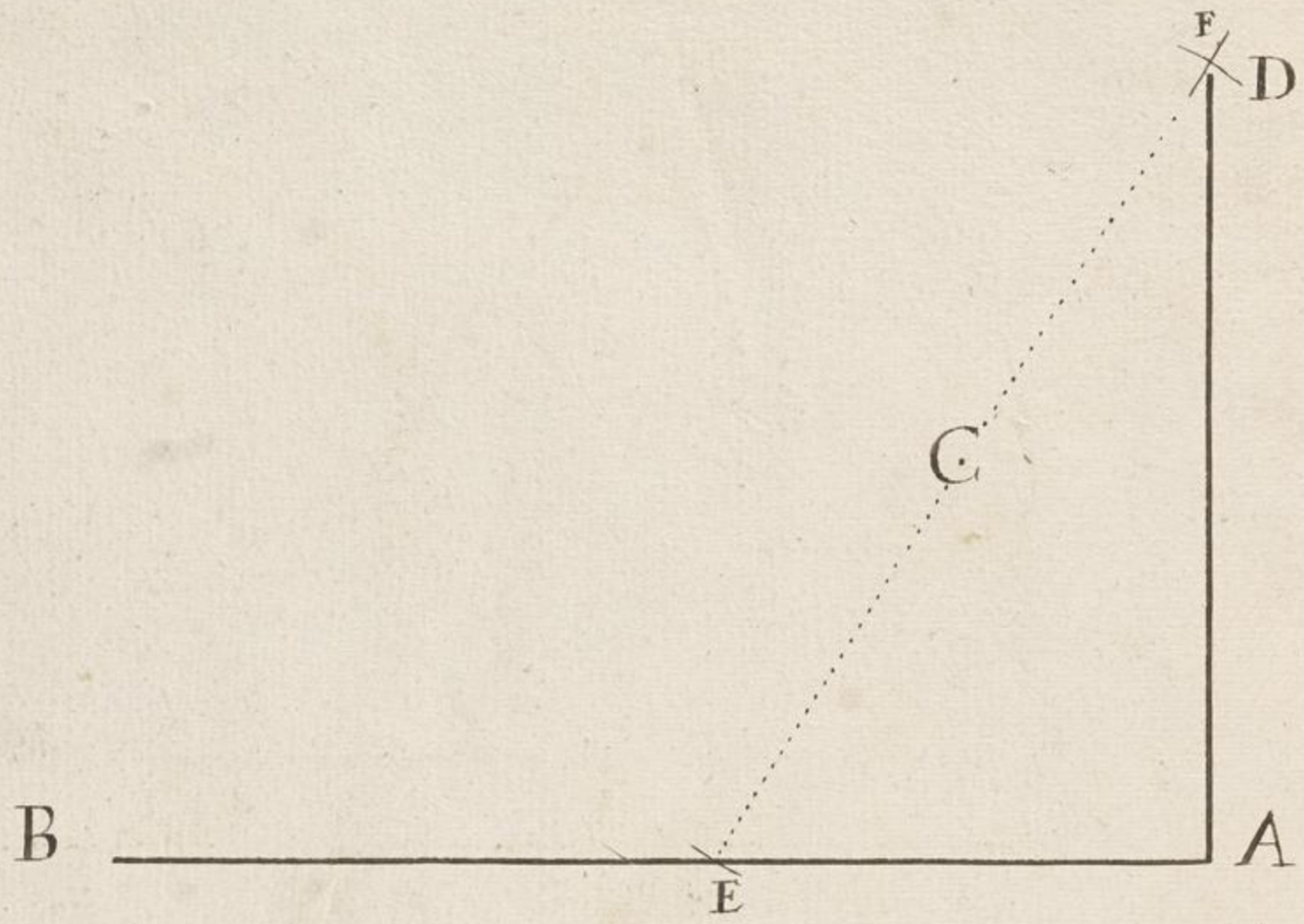
Let A B be a line given and Let it be required to erect a perpendicular uppon the end A./



Set one foot in the end A, and openinge your Compasses at pleasure, make the arch C D & then with the same Distance settinge one foot in C crosse that arch in D. and with that done, kepe one futt in D and make with the other the arch E G. Then set one foot in C and with the same distance crosse the sayd arch E G in F. Lastly Draw the line F A. which shall be a perpendicular uppon the end A of the line A B. which was requirrd./

3 Another way

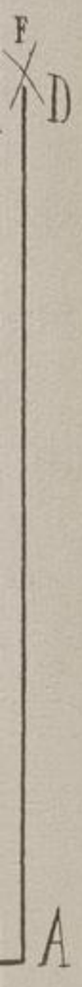
To erect a perpendicular upon the end of a line.

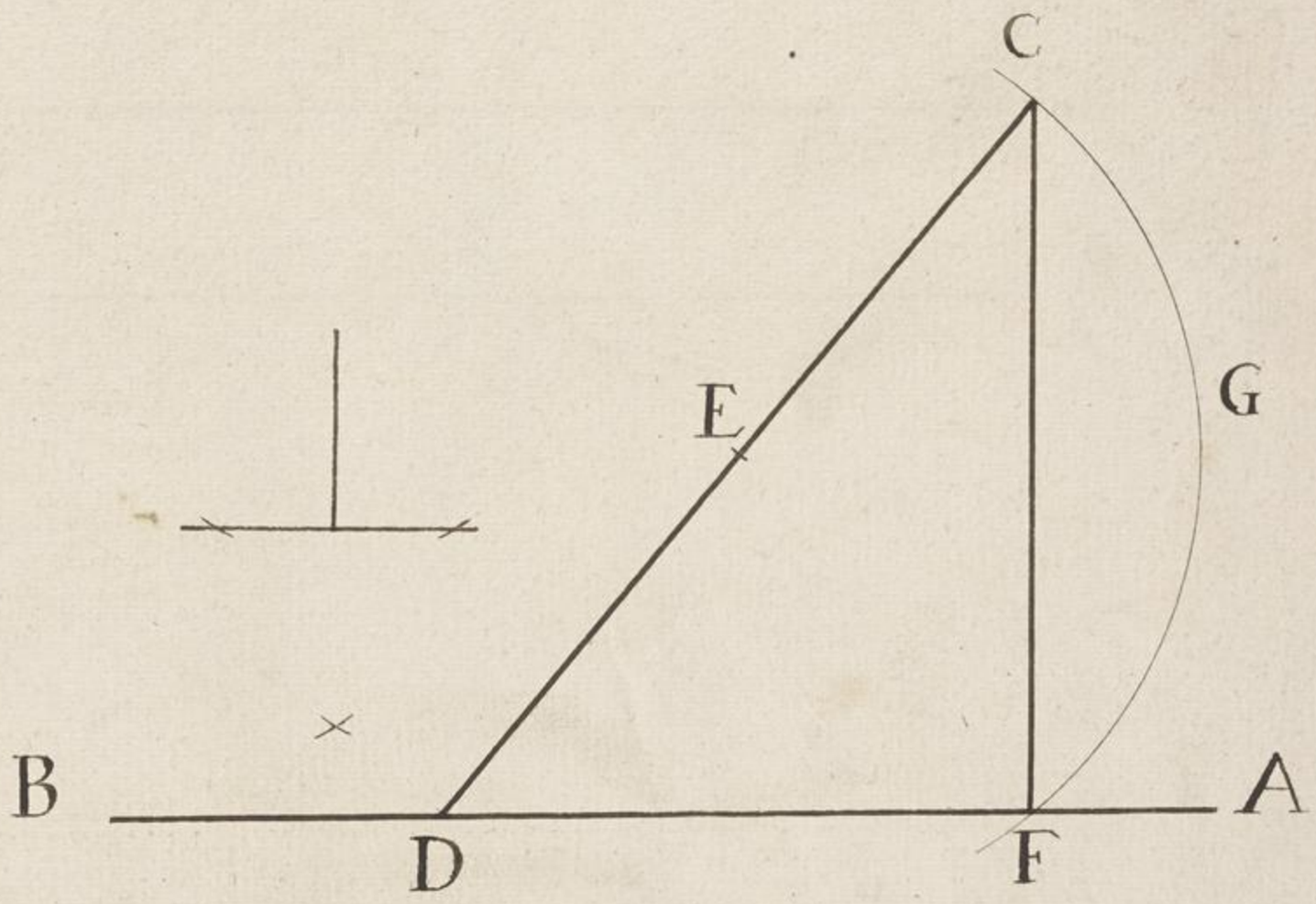


Let A B be a line giuen and it is required, uppon the end A thereof, to erect a perpendicular; Set one foot in the end A and with the other take a poynt at pleasure as C Then kepinge one foot in C make aloft the arck D. and crosse also the line A B in E. that done Lay your rular by y^e^ points E C. and where it crosseth the arck D set F. Lastly draw the line F. A as was required.

Prob: 4.

&c.
From a point^{e} aloft, to Let fall a perpendicular to a line giuen.



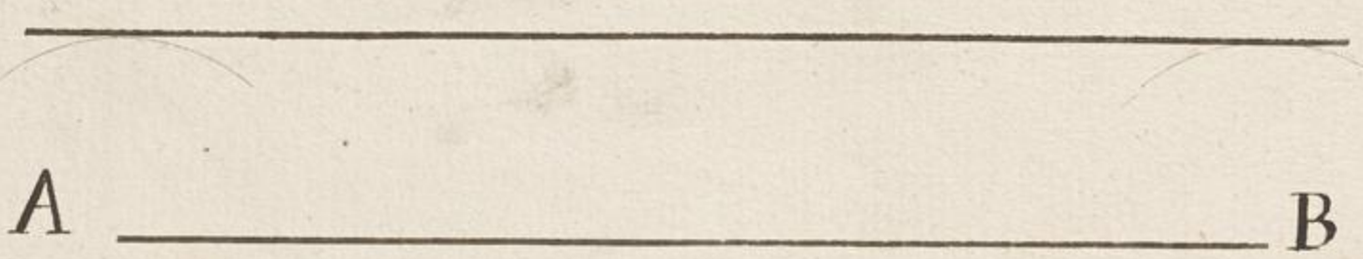


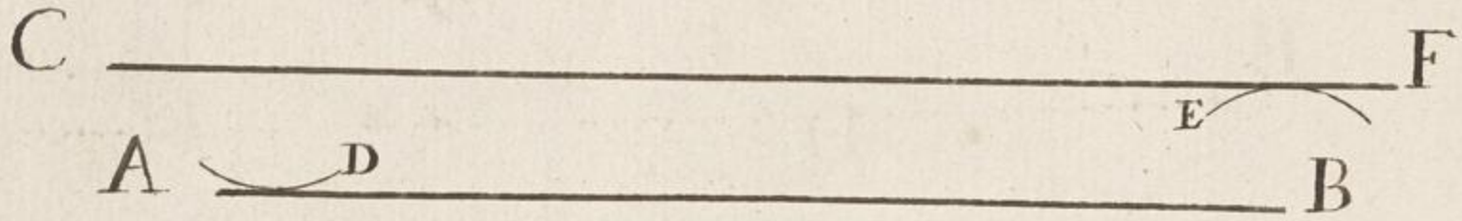
In the last Diagram on the right hand, Let A B be a line giuen, and Let C be a point aloft, from whence it is required to Let fall a perpendicular to A B. lay the rular by the point C and any part of the line A B. as D and drawe the line C D. which deuide in to two equall parts in E then keping one futt in E w.th the distance E C make the arch C F. to Cutt A B in F. Lastly drawe the line C F. which performeth the demand.

Prob: 5./

To drawe a parralell to a line giuen./

Let A B be a line giuen, whereunto it is required to drawe a parralell./





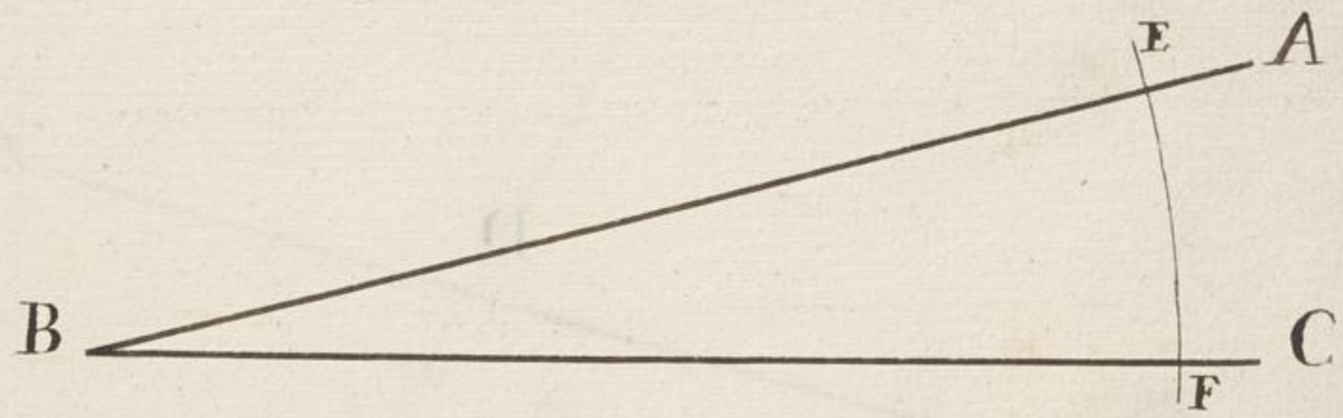
In this diagram below, Let A B be a line giuen and C a point assigned, from whence it is required to drawe a parralell to A B./

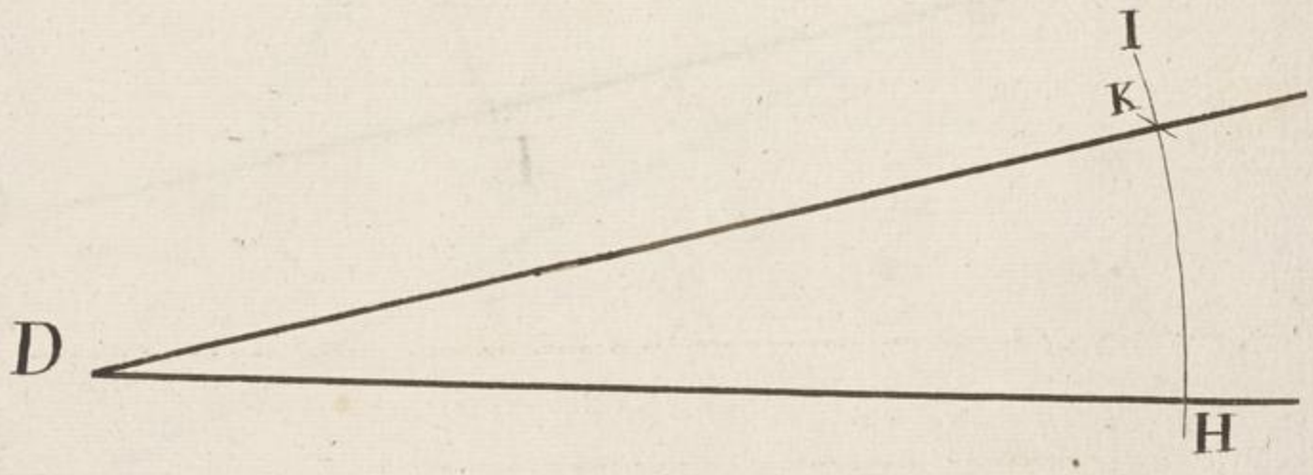
Set one foot in C and takinge the shortest distance to A B. make the arch D to touch the line A B. Then with the same distance setinge one futt in the end B with the other make the arch E that duns; lay your rular by the point C & the tippe of the arch E and drawe the line C F which shall be a parralell to A B as was required./

Prob: 6.

To drawe an angle Equall to an angle giuen.

Let A B C be an angle giuen and it is required to make another angle equall there unto.



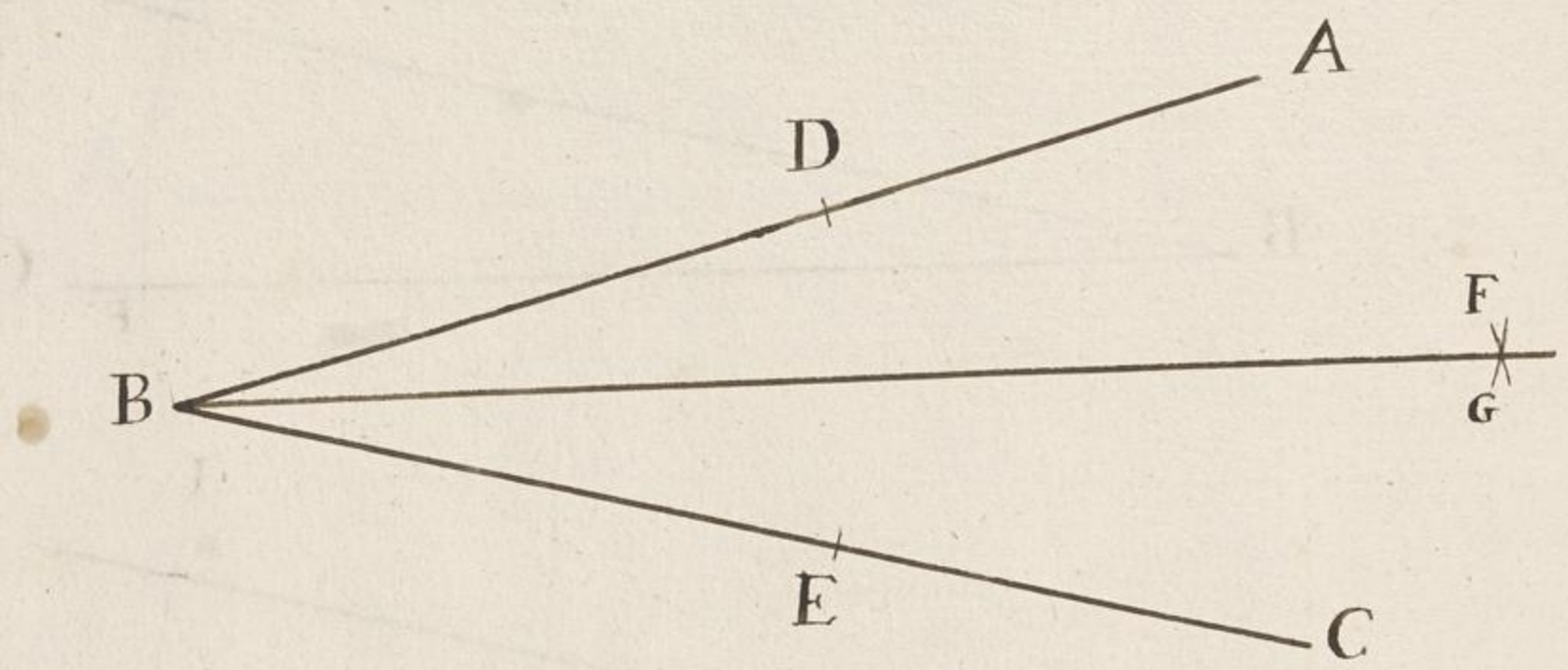


first draw any where a line as D H then settinge one foot in the angle B open the other to almost the end A or the end C and make the arch E F. also set one foot in the end D (of the line D H) and with the same distance make the arch H I. that done take the Distance F E. and settinge one foot in H. crosse the arch H I in K Lastly drawe the line D H which shall include the angle K D H equall to the angle A B C. required.

Prob: 7./

To Deuide an angle giuen into two equall parts./

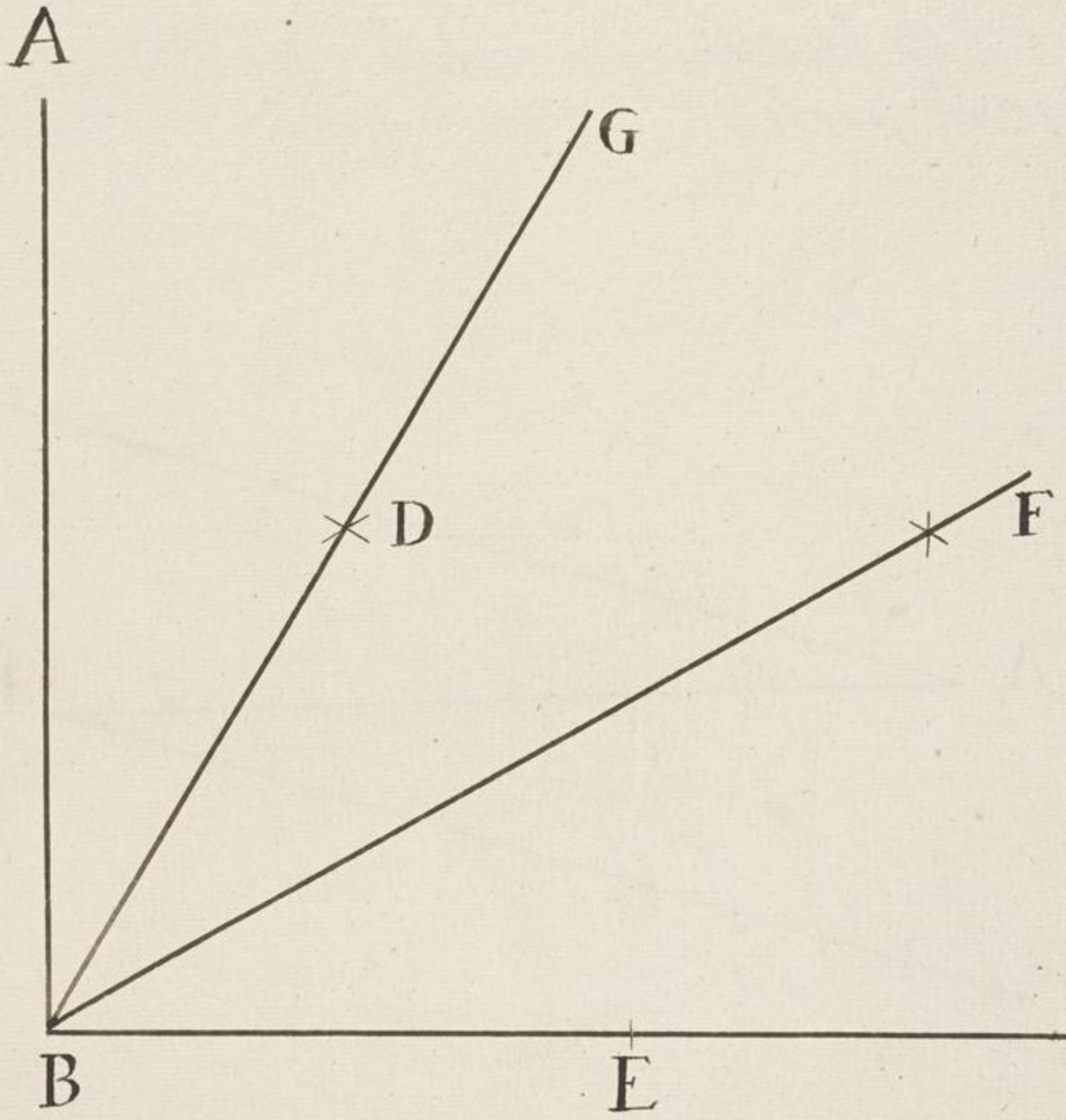
Let A B C be an angle giuen to be deuided into two equall parts./



Set one foot in B and opening the other at pleasure, make in the sides, the points D & E then with the same distance or some other settinge one foot in E make the arch ff that done set one foot in D and crosse that arch in G Lastly drawe the line B G. which shall deuide the angle A B C into two equall parts required./

Prob: 9.

To deuide a right angle given into three equall parts.

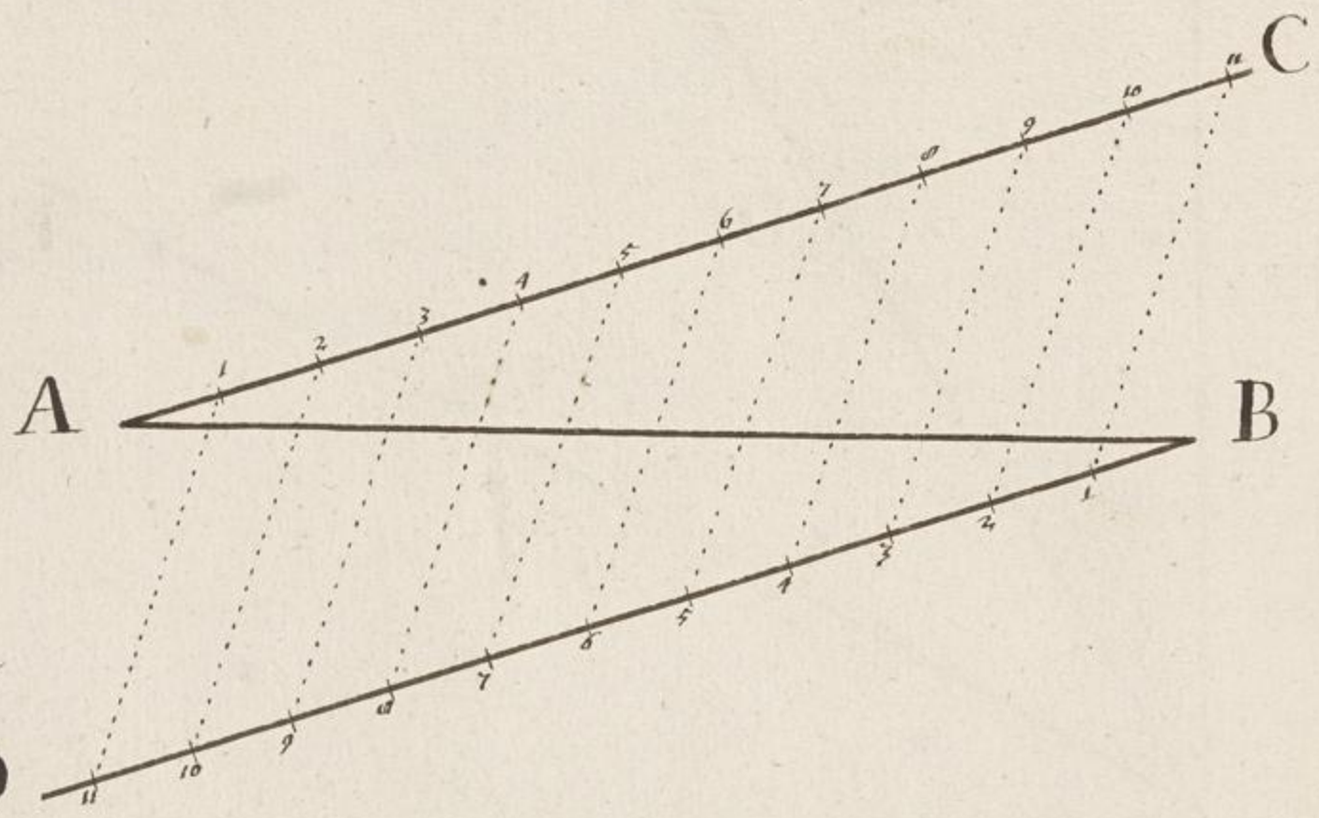


Let ABC be a right angle given to be deuided into three equall parts at any conuenient distance, with one foot in B crosse the Line BC. as at E. and at the same distance on the points B & E Strike two arch Lines crossing one the other in the point D by which point and the angle B drawe the Line BG then, by the last before goinge, deuide the angle GBC into two equall parts, with the Line BF soe shall those two Lines BF. and GB deuide the right angle given into three equall parts; which was the thinge required.

Prob: 9.

To deuide a line giuen into any number of equall parts required.

Let A B be a line giuen, to be deuided into fiue equall parts.

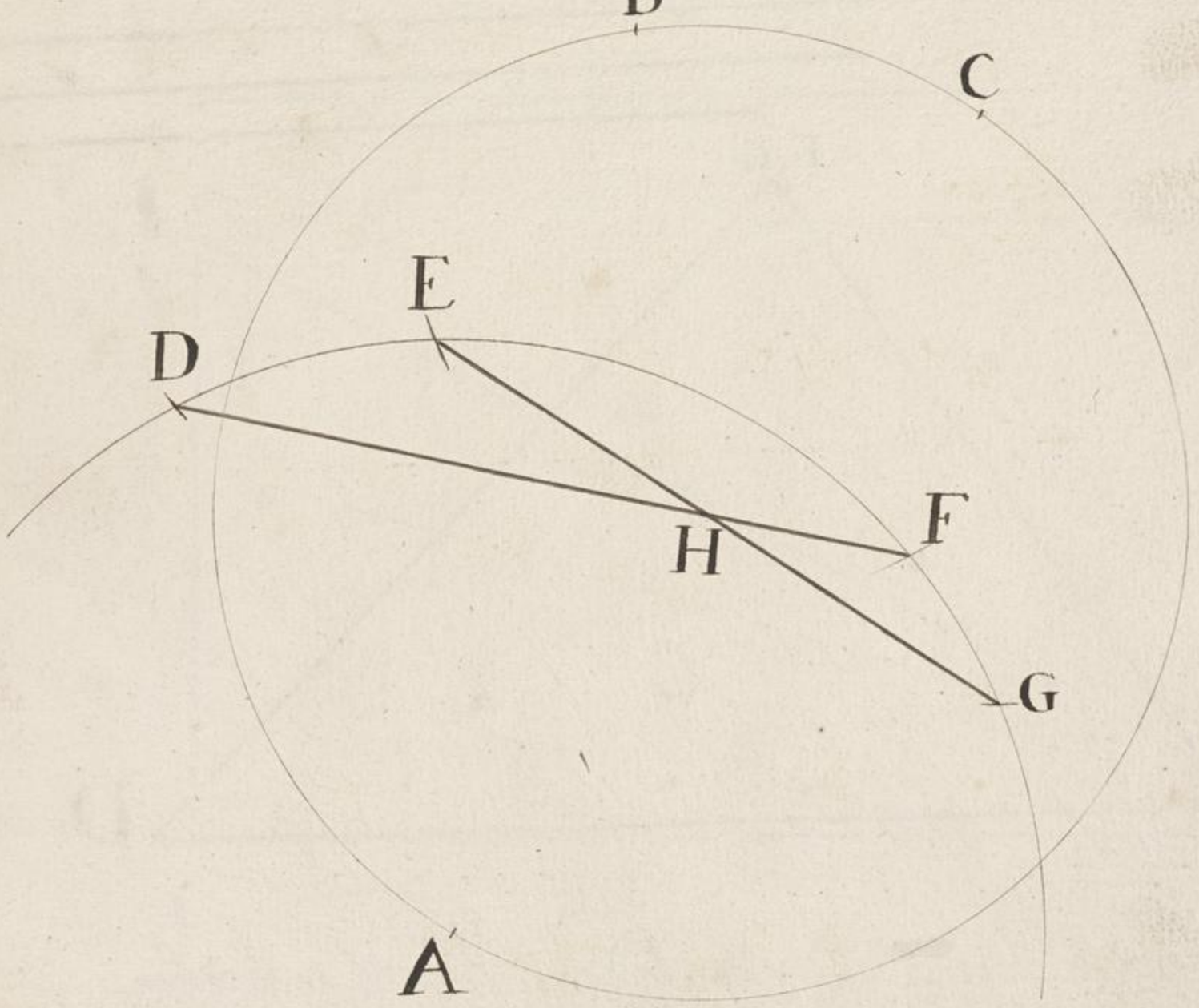


first from the end A draw a line at pleasure makinge with the giuen line A & any kinde of angle, as the angle B A C then by the seuenth proposition make the angle D B A equall there unto by drawinge the line B D. that done, set from A towards C a lauen equall spaces at pleasure alwayes one les then the number giuen whereinto the line is to be deuided, likwise begining at B set upon the line B D the same lauen equall spaces from B towards D as you see on both sides numbred by 1.2.3.4.&c. Lastly, draw crosse lines from one point to the other, to cutt the line A B. so shall you deuide it into twelue equall parts required.

Prob: 10./

To bringe three points not ling in a Stright line, into a Circomferrence./

Let the A B C be three points giuen, to be brought into one Circomferrence./

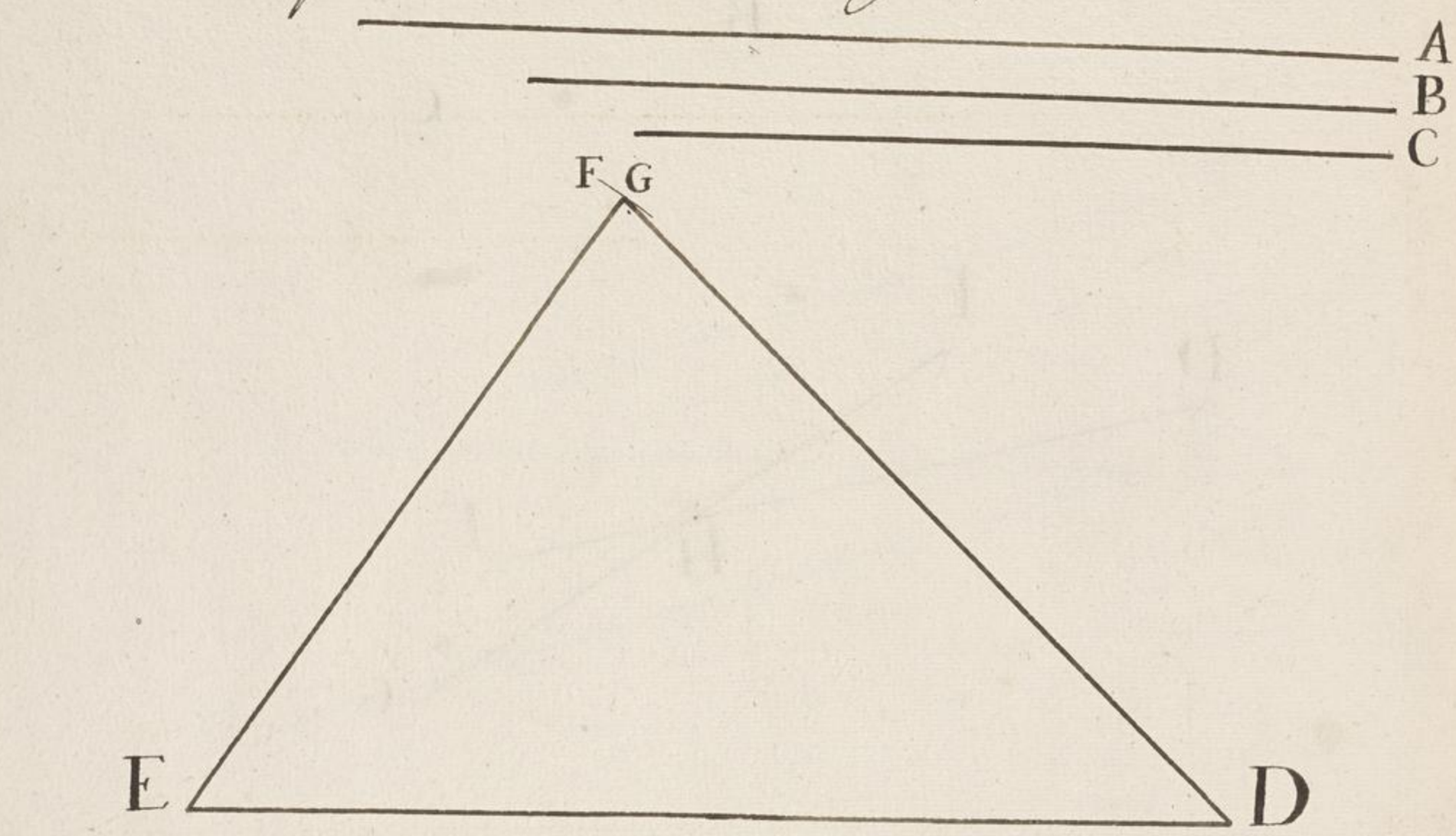


Set one foot in A and opening your Compasses to aboue halfe the distance A B make the arch D E F G then with the same distance setting one foot in B crosse that arch in the points D F. & drawe the line D F. then sett also one foot in C and with the same distance crosse againe that arch in the points G E and drawe also the line E G which cutteth the line D F in H. so is H the Center: Therefore set one foot in H and extend the other to any of the points A B C and make a Circle A B C which shall passe by the three giuen points required./

Prob: 11./

Of three lines giuen, for the two shortest together be Longer then the third to make a Triangle./

Let A B and C be three lines giuen whereof it is required to make a Triangle./

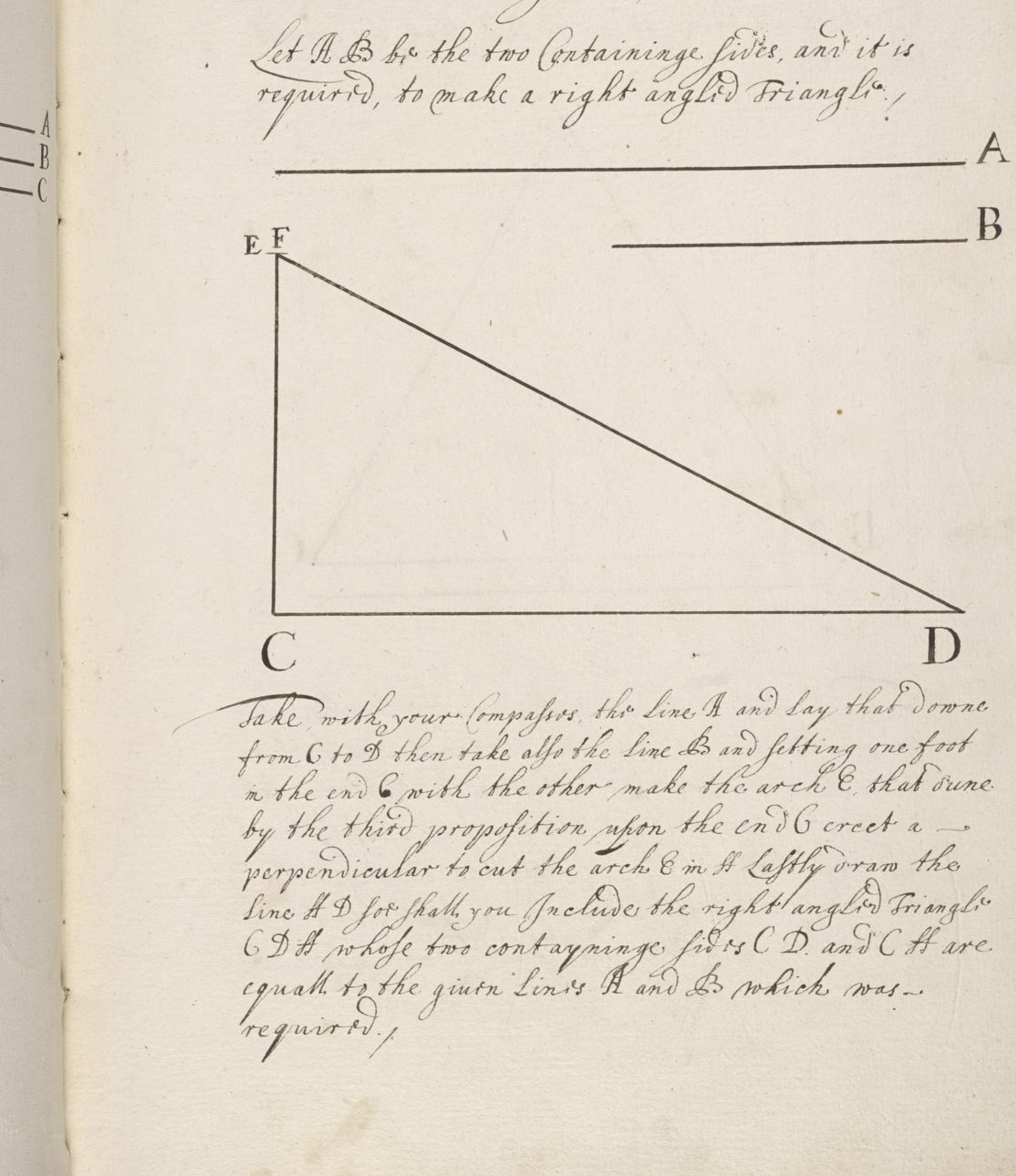


Take the line A and Lay it downe from D, to E, then take the line C with your Compasses and setting one foot in E make the arch H that done take the line B and setting one foot in the end D, with the other crosse that arch in G. Lastly, draw the lines DG and GE, for you Include the Triangle DGE whose three sides shall be equall to the three lines A B C required./

Prob: 12.

To make a right angled Triangle the two containinge sides being giuen.

Let A B be the two Containinge sides, and it is required, to make a right angled Triangle.

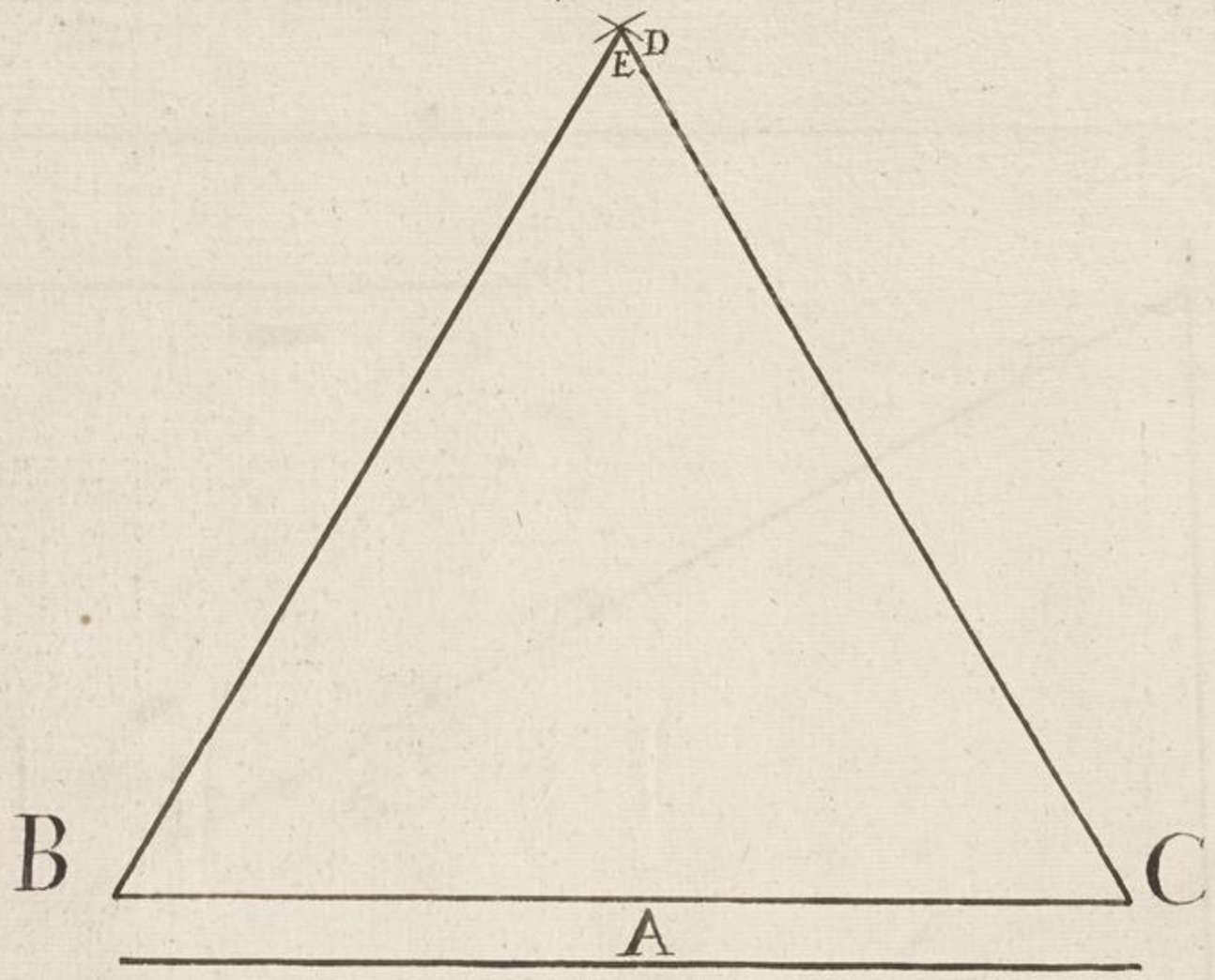


Take with your Compasses the line A and lay that downe from C to D then take also the line B and setting one foot in the end C with the other make the arch E that dune by the third proposition upon the end C erect a perpendicular to cut the arch E in F Lastly draw the line F D for shall you Include the right angled Triangle C D F whose two containinge sides C D and C F are equall to the giuen Lines A and B which was required.

Prob: 13.

To make an Equilater Triangle the sides being given.

Let A be a line given, and it is required to make an Equilatterall Triangle, whose side shall be equall thereunto.

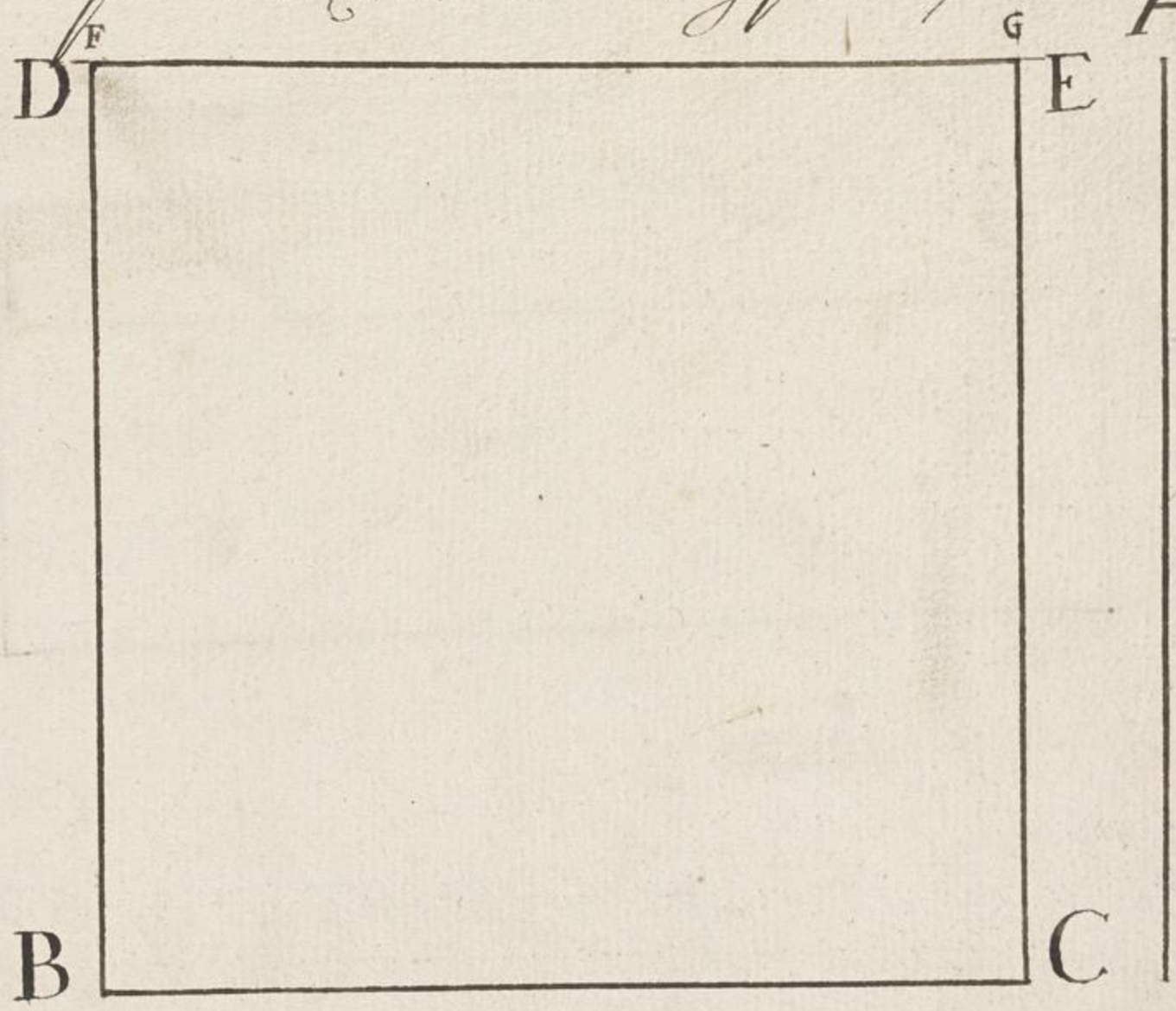


Take the line A and lay it down from B to C then with the same distance setting one foot in B with the other make the arch D, that done set one foot in C and cross the arch in E Lastly draw the lines BE and EC for shall the Triangle BEC. be equilatterall and his sides equall to the given line A which was required to be made.

Prob: 14.

To make a Square the Side Bringe giuen.

Let A be the Side giuen of a Square and it is required to make out the Square.

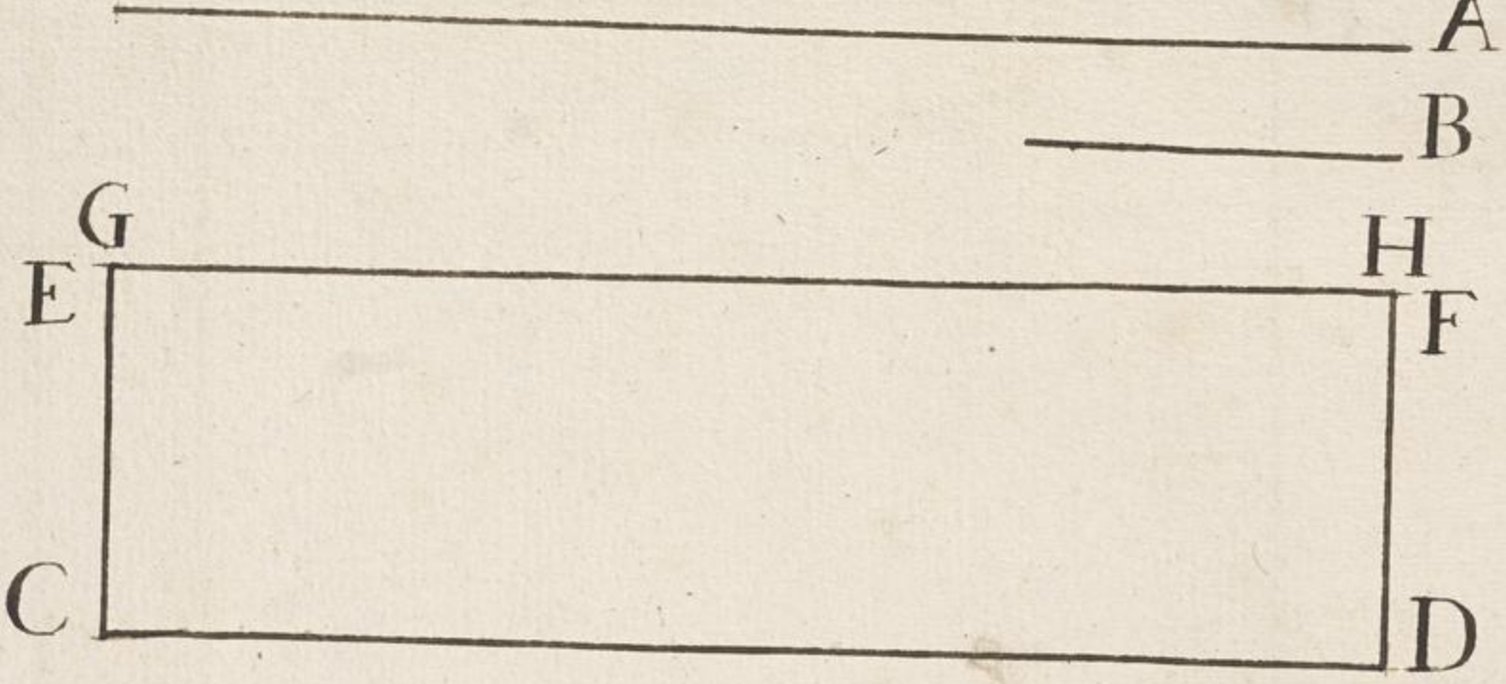


Take the Line A with your Compasses, and lay that downe from B to C then w.th the distance BC Setting one foot in B make the arck D, Set also one foot in C and make the arck E then by the third proposition, erect a perpendicular upon the end B, to cutt the arck D in F, that done take the distance BC, and Setting one foot in F with the other crosse the arck E in G, Lastly draw the Lines FG, and GC So shall you include the Square BFGC. whose Side shall be equall to the Line A required.

Prob: 15.

To make a parrallellogram or a longe-
Square, the length and breadth
being giuen.

Let A and B be the Length and bredth giuen and it is required to make the longesquare.

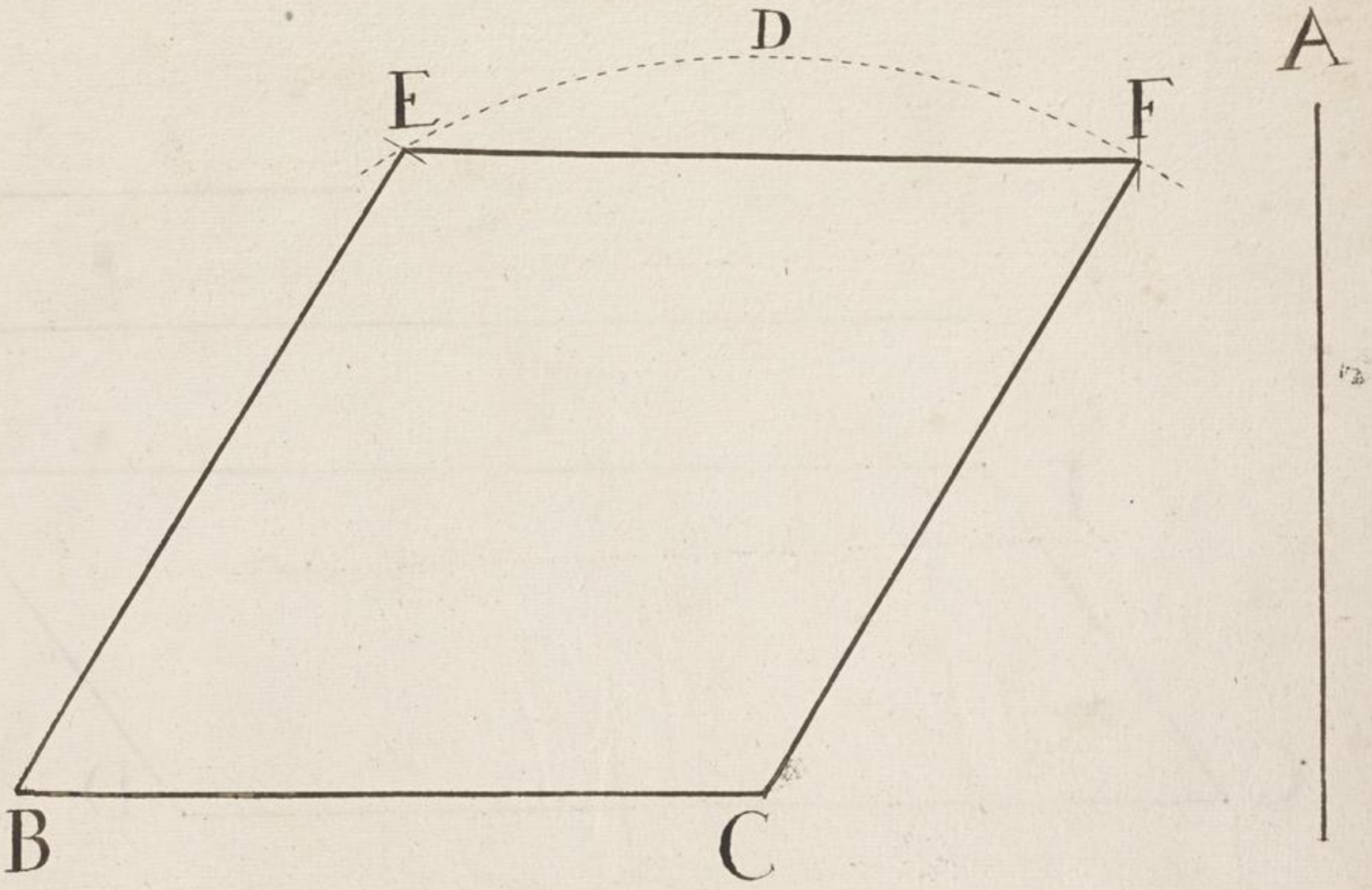


Take the length A with your Compasses and lay that
downe from C to D then take also the bredth B and
setting one foot in the End C, with the other, make
the arch E, the like doe at the end D and make the
arch F then by the third proposition upon the end
C erect a perpendicular to cut the arch E in G, that
done take the Length C D, and setting one foot in
G, with the other cross the arch F in H lastly
Drawe the lines G H and H D so shall you include the
longe Square C G H D, whose length and bredth
shall be equall to the lines A and B required.

Prob: 16.

To make a Rombus the side beinge giuen.

Let A be a line giuen, and it is required to make a Rombus, whose side shall be equall thereunto.

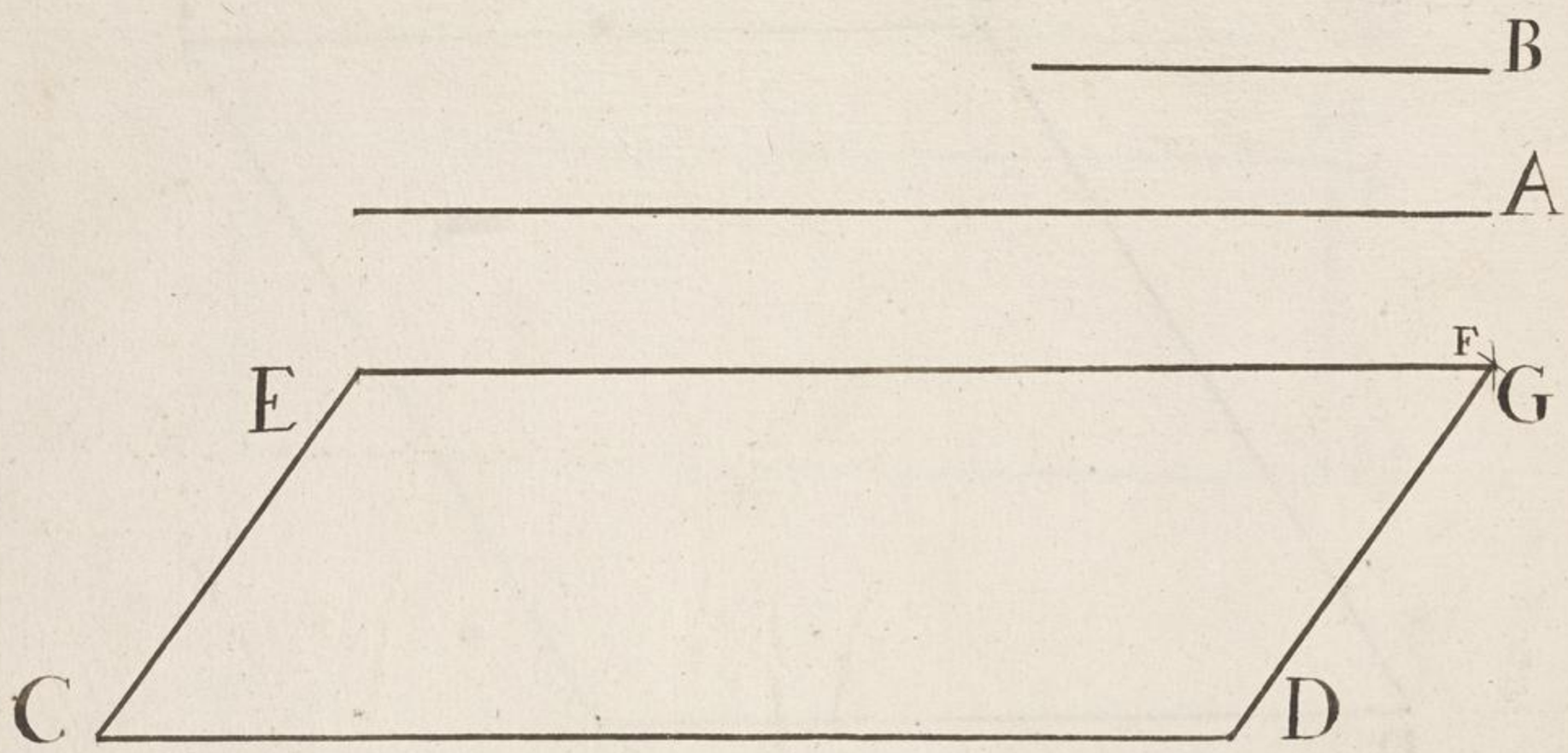


Take the line A and lay it downe from B, to C then with the same distance settinge one foot in C make the arch D that done set one foot in B and crosse that arch in E, againe set one foot in E and crosse the same arch againe in F, Lastly draw the lines BE. EF. and FC, so shall you inclose the Rombus BEFC, whose side shall be equall to the line A, required.

Prob: 17.

To make a Romboides, the length & bredth bringe given.

Let A and B be the length and bredth given, and it is required to make the Romboides.



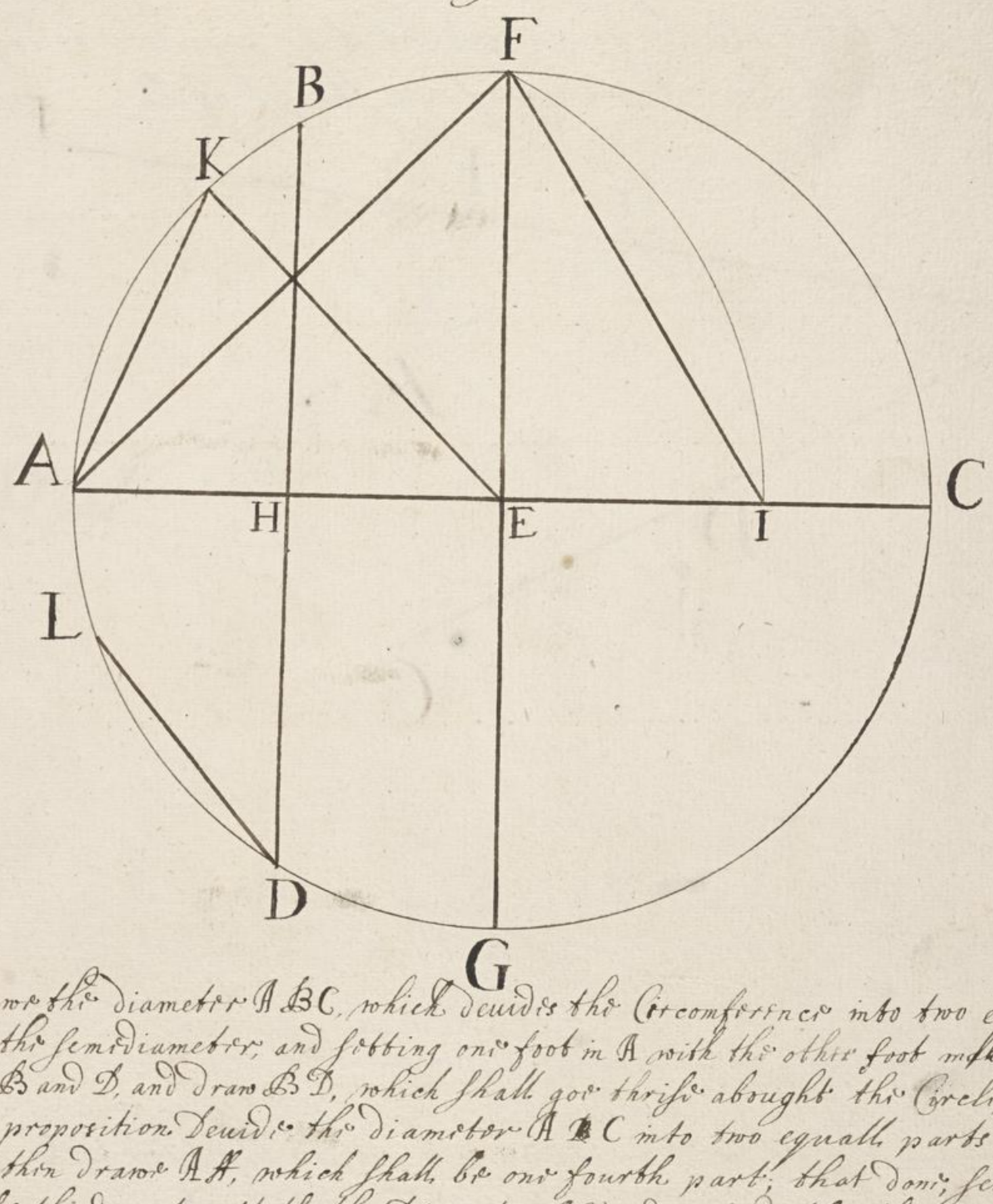
Take the length A and lay it downe from C to D, then take alsoe the bredth B and setting one foot in the end C, with the other take any wheare a point as E and draw CE, then with the same distance setting one foot in the end D with the other make the arch ff. that done take the whole Length CD, and setting one foot in E with the other crosse the arch ff in G, Lastly draw the Lines EG, and GD so shall you include the the Romboides CEGD whose length and bredth shall be equall to the Lines A and B required.

Prob: 10.

To devide a Circomference of a Circle into any part not above

Fenn.

Let A B C D be a Circle given to be for devided.



First draw the diameter A B C, which devides the Circomference into two equall parts — then take the semidiameter, and setting one foot in A with the other foot make in ye Circomference the points B and D, and draw B D, which shall cut thrise abought the Circle, that done, by the first proposition devide the diameter A B C into two equall parts at right angles with F G, then draw A F, which shall be one fourth part; that done, set one foot in H (where the third part cutteth the Diameter A C,) and extend the other to F, and make the arch F I, then draw the right line F I, which shall be one fifte part.

The sixt part is always the Semidiamiter.

The Seuenth part is halfe the third vizt. B H or H D.

For the Eight part devide by ye 9th proposition the angle A E F, into two equall parts, with the line E K, which cutteth the Lymbe into K, then draw A K, which cutteth shall be the eight part

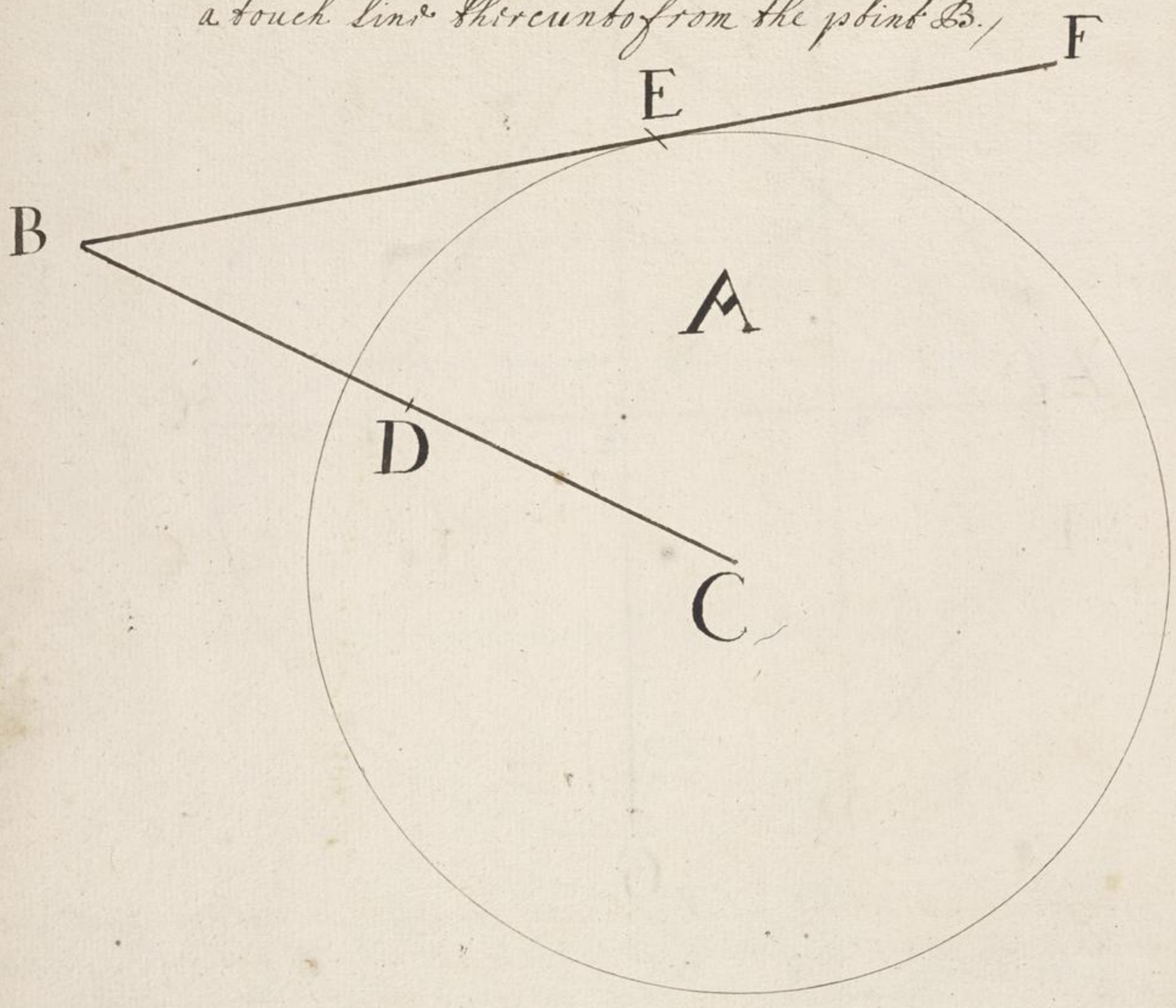
For the ninth part take always one third of ye arch B A D, as D L.

The tenth is always the line E I.

Prob: 19.

From a point assigned, to draw a touch line to a Circle given.

Let A be a Circle given, and let it be required to draw a touch line thereunto from the point B.

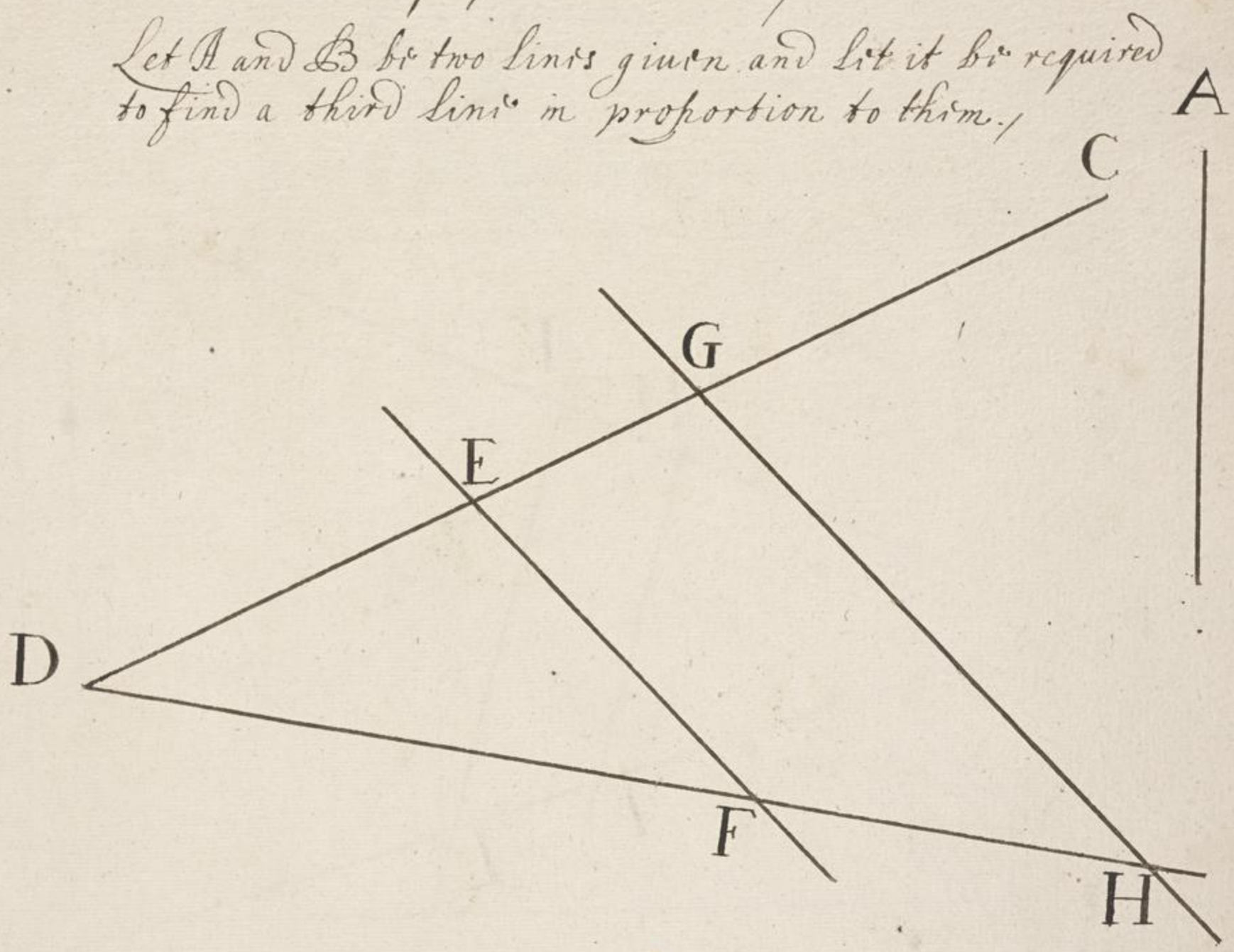


From the point B draw a line to the Center C, which divide into two equall parts in D, then keeping one foot in D with the distance DB or DC, cross the Circle in E, Lastly, draw the line BEF, which shall be a touch line to the given Circle A as was required.

Prob: 20.

Vnto two lines giuen to finde a third proportionall line.

Let A and B be two lines giuen and lit it be required to find a third line in proportion to them.

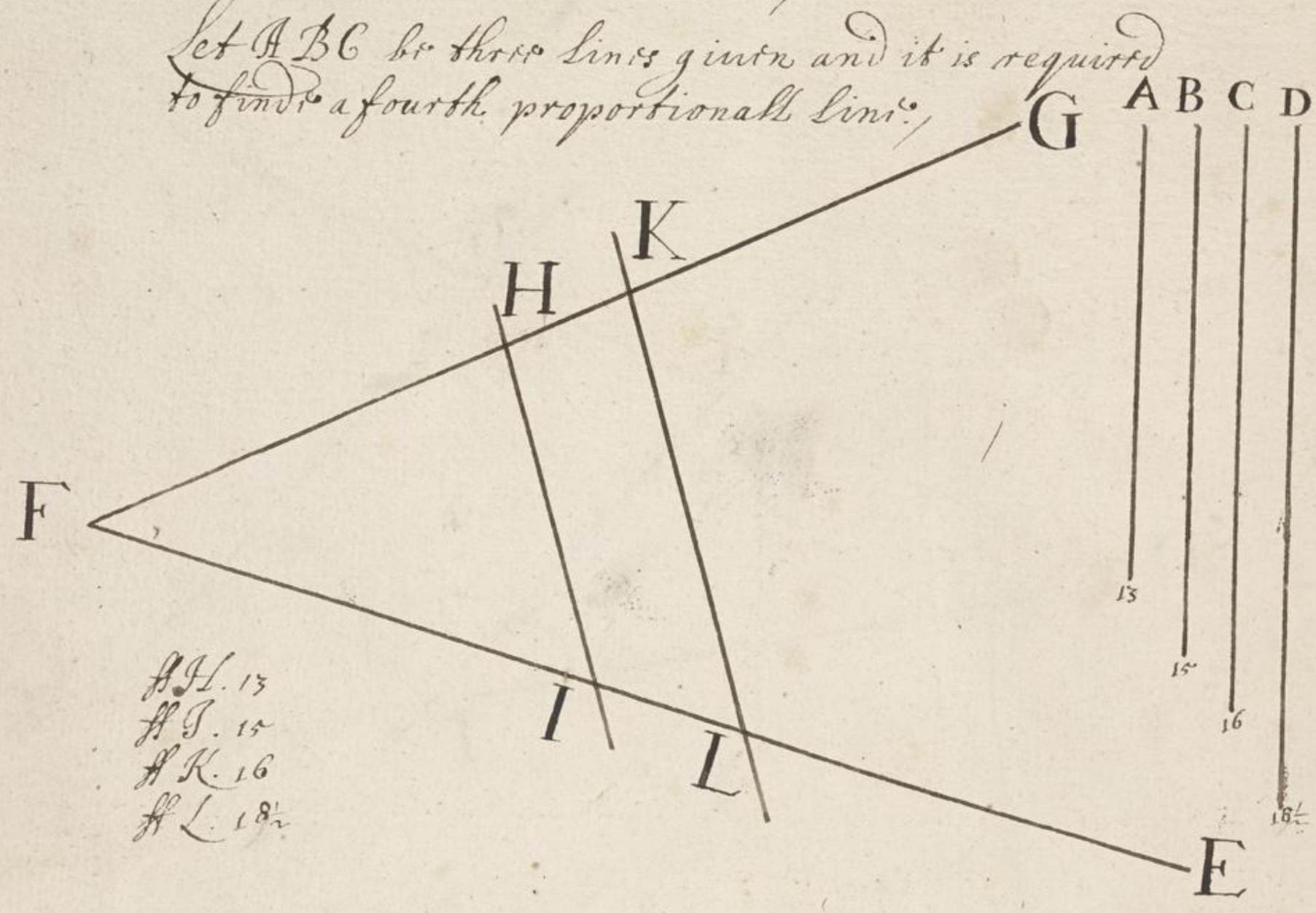


first make any angle as CDH then set the line A, from D to C and the line B from D to H and also from D to G, then draw E H, that done by the point G draw the parrallell to E H, as G H. for shall DH, be the third proportionall line required.

Prob: 21.

Into three lins giuen to find a fourth in proportion, that is to performe the rule of three in lins.

Let ABC be three lins giuen and it is required to finde a fourth proportionall lin[e].



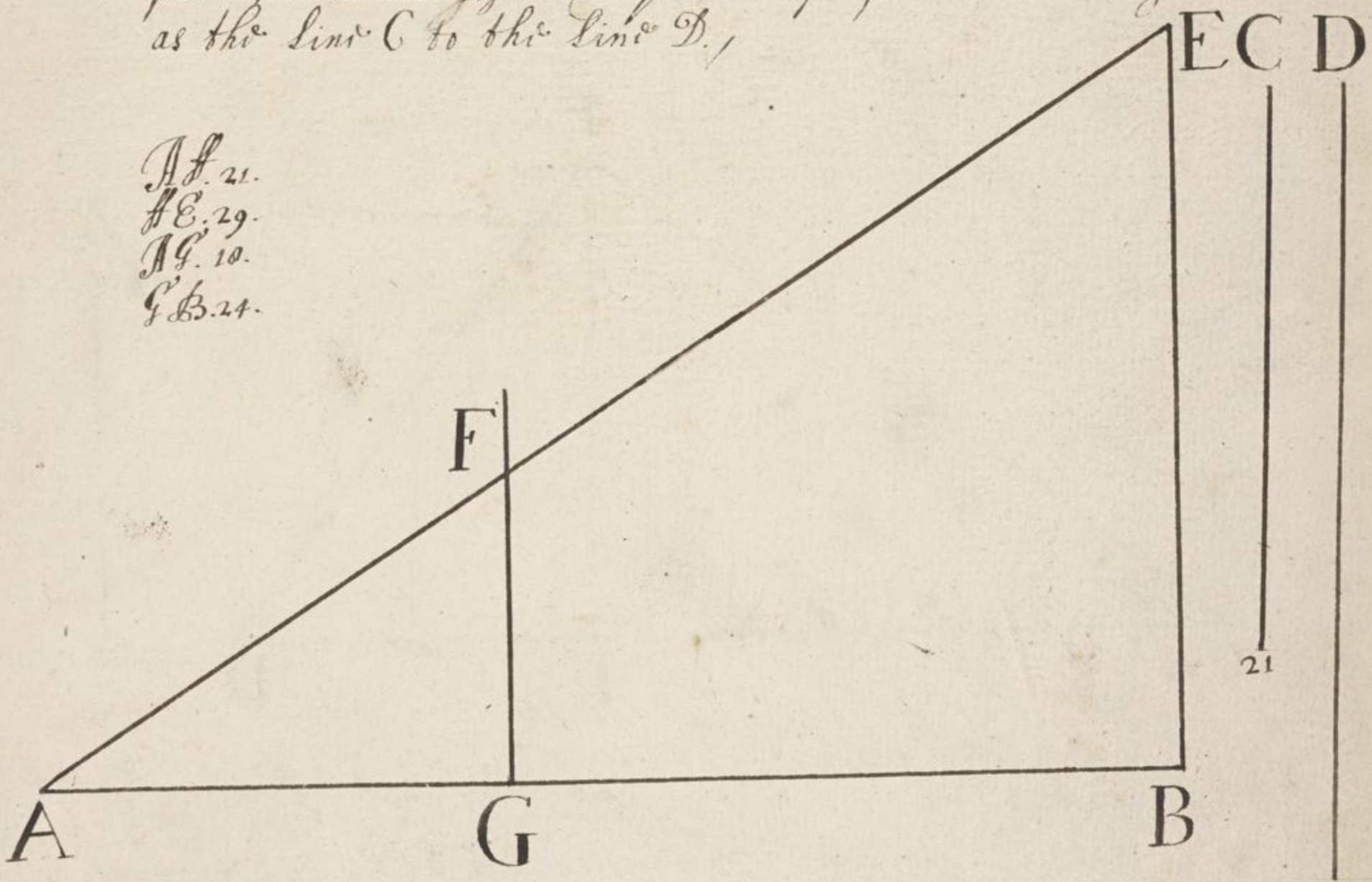
First as in thi[s] last proposition, maki[e] any angli[e] at pleasure, as thi[s] angli[e] CHG, thin taki[e] with your Compasses, thi[s] lini[e] A, and set it from H to L, taki[e] also thi[s] lini[e] B and set it from H to I, and drawi[e] thi[s] lini[e] LI, That doni[e], taki[e] thi[s] third lini[e] C and set it upon thi[s] lini[e] HG, viz alwais upon y[e] same lini[e], where the first lini[e] A, was plased from H, to K; Thin by K draw a parralell lini[e] to LI, as KL to cutt HE in L for shall HL be thi[s] forth proportionall lini[e] required.

Prob: 22.

To deuide a line giuen, into two parts in proportion one to the other according to two lines giuen.

Let A B, be a line giuen, to be deuided into two such parts, that the lesser may be in proportion to the greater as the Line C to the Line D.

A ff. 21.
ff E. 29.
A G. 10.
G B. 24.



From the end A draw the line A E making the angle B A E, then set the line C, from A to ff, and the line D from ff to E, and draw the line E B; Lastly by the point ff draw a parrallell to E B, as ff G to cutt A B in G for shall A B, be deuided in G as C, to D which was required.

Prob: 23.

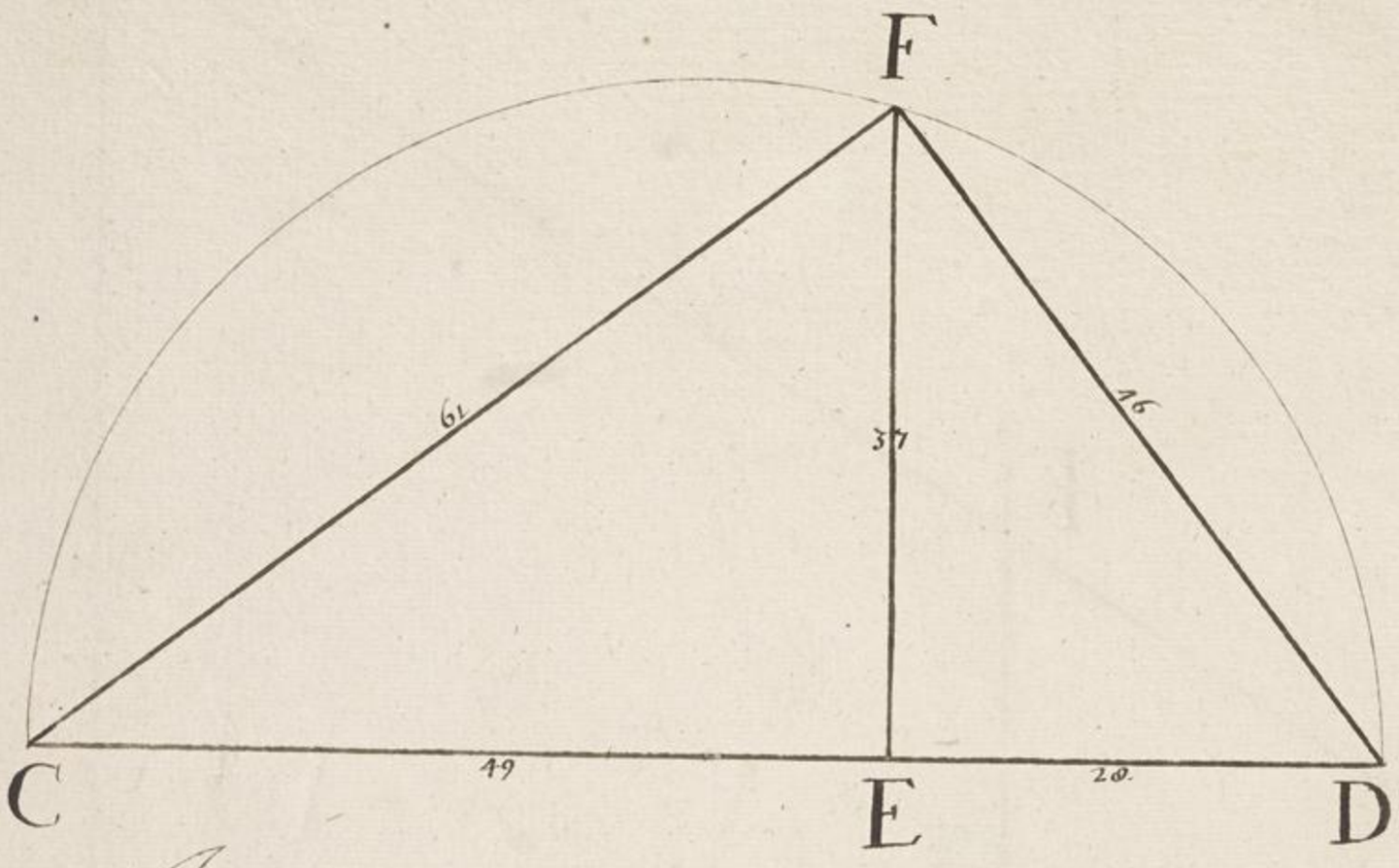
To cut of from a line giuen, any part or parts required.

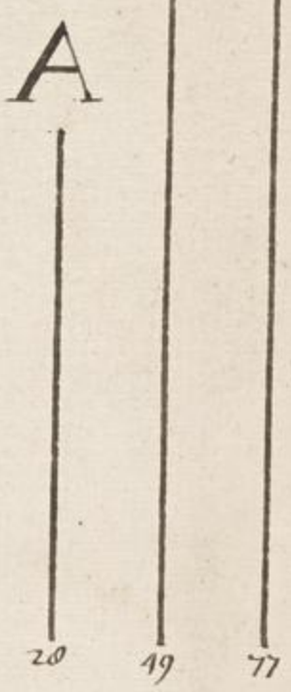
Let in the Last diagram, A B, be a line giuen, and let it be required to cut of from it two fift parts. First from the end A, draw the line A E, making any angle as B A E, then set on any fitt equall parts from A, to E & also two of the same parts from A to B. That done draw the line E B, then by E, draw a parralell thertunto to cutt A B in F so shall A F be the ~~fift~~ two fift parts of A B, which was required.

Prob: 24.

Betweene two Lines given to finde a Meane proportion.

Let A and B be two lines given betweene the which it is required to finde a meane proportion.





Joyne the Lines A and B for together that they make one right Line as CD beinge ioyned together in the point E, and upon ye Line CD, discribe the Semicircle viz CFD, Then upon the point E, where the Lines AB beinge Joyned together moote; erect a perpendicular to Cutt the Lymbe in F, as EF, which shall be a meane proportion betweene the Lines AB required.

Prob 25.

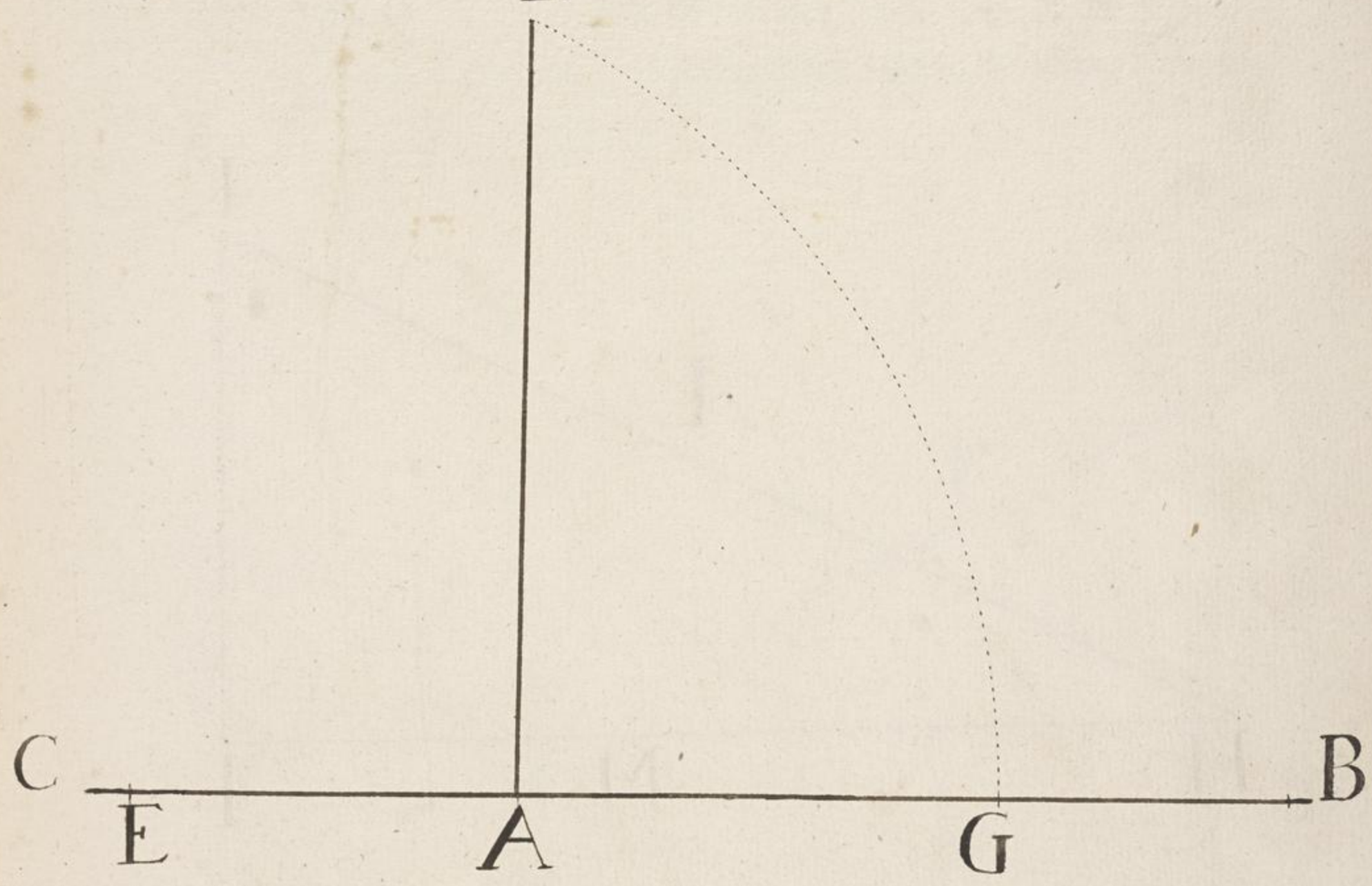
Another way.

Againe in the same diagram; let the Lines A and G be given, betweene the which it is required to finde a meane proportion. Take the line G and Lay it downe from C to D and draw CD, whereupon discribe the Semicercle CFD, then take the line A and set it from D to E then upon the point E erect a perpendicular to cut the Lymbe in F. Lastly, draw DF which shall be a meane proportion betweene DE and DC or betweene the Lines A and G required; And if you draw CF it shall be a meane betweene B and G, that is betweene CE and CD.

Prob: 26.

To Deuide a Line given by Extream & meane proportions.

Let AB, be a Line given to be deuided by Extream & meane:

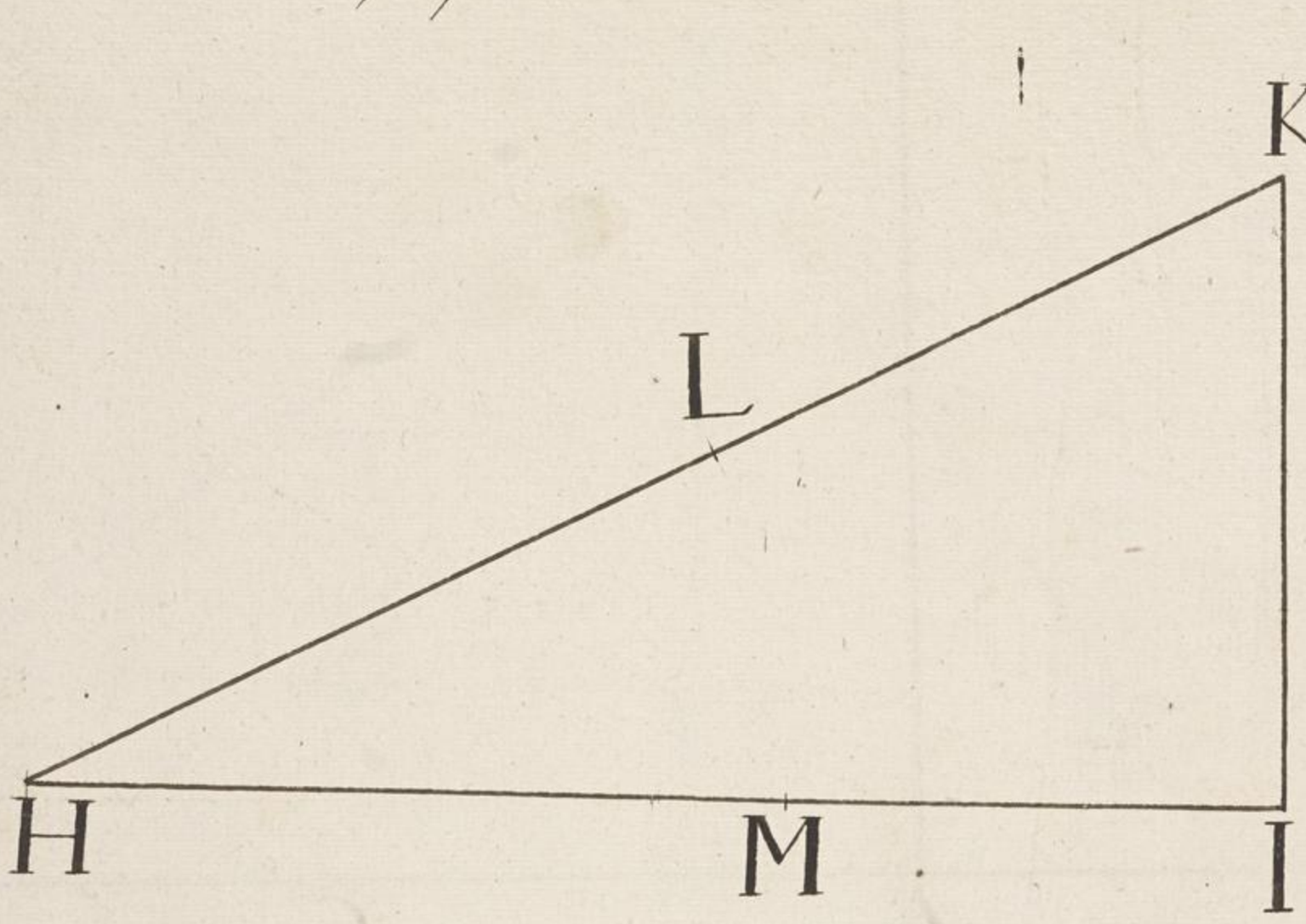


Increase AB at length to C then upon the point A erect a perpendicular as AD of the length of AB that done take half AD or AB and set it from A, to E then with the distance ED make the arch DG so shall AB be deuided by Extream and meane proportion in G and AG is the greater segment, and GB, the lesser.

Prob: 27./

To devide a line given by extrtame
and meane proportions
another way./

Let H I be a line given, to be devided by extreame
and meane proporton./

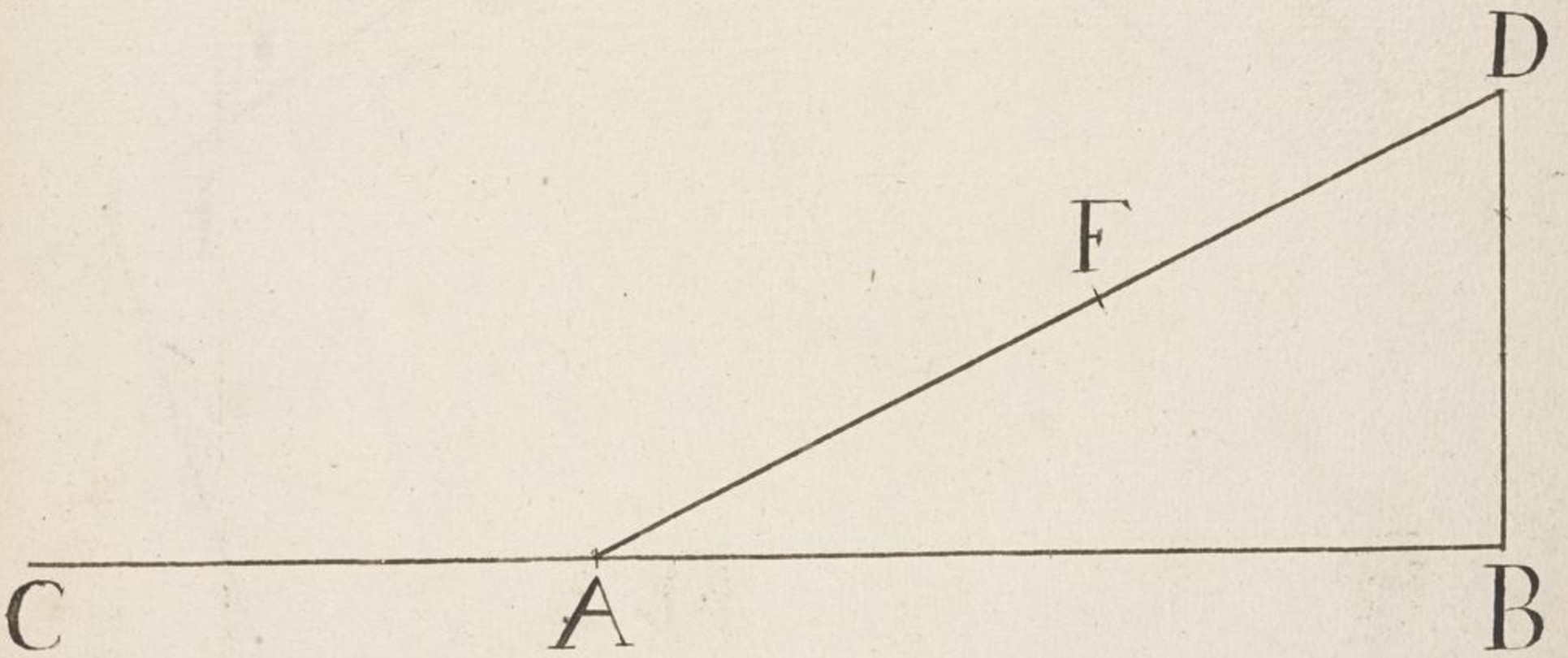


Upon the end I erect a perpendicular as I K of
the length of halfe the given line H I, then draw
the subtendant side H K that done set K I, from
K to L Againe set H L from H to M so shall H I,
be devided by extreame and meane proportion in
M; and H M shall be the greater segment, and M I.
the lesser./

Prob: 20.

The grater segment of a line deuided by extreame and meane proportion being giuen to finde the whole line.

Let B A be the greater segment giuen and the whole line is required.

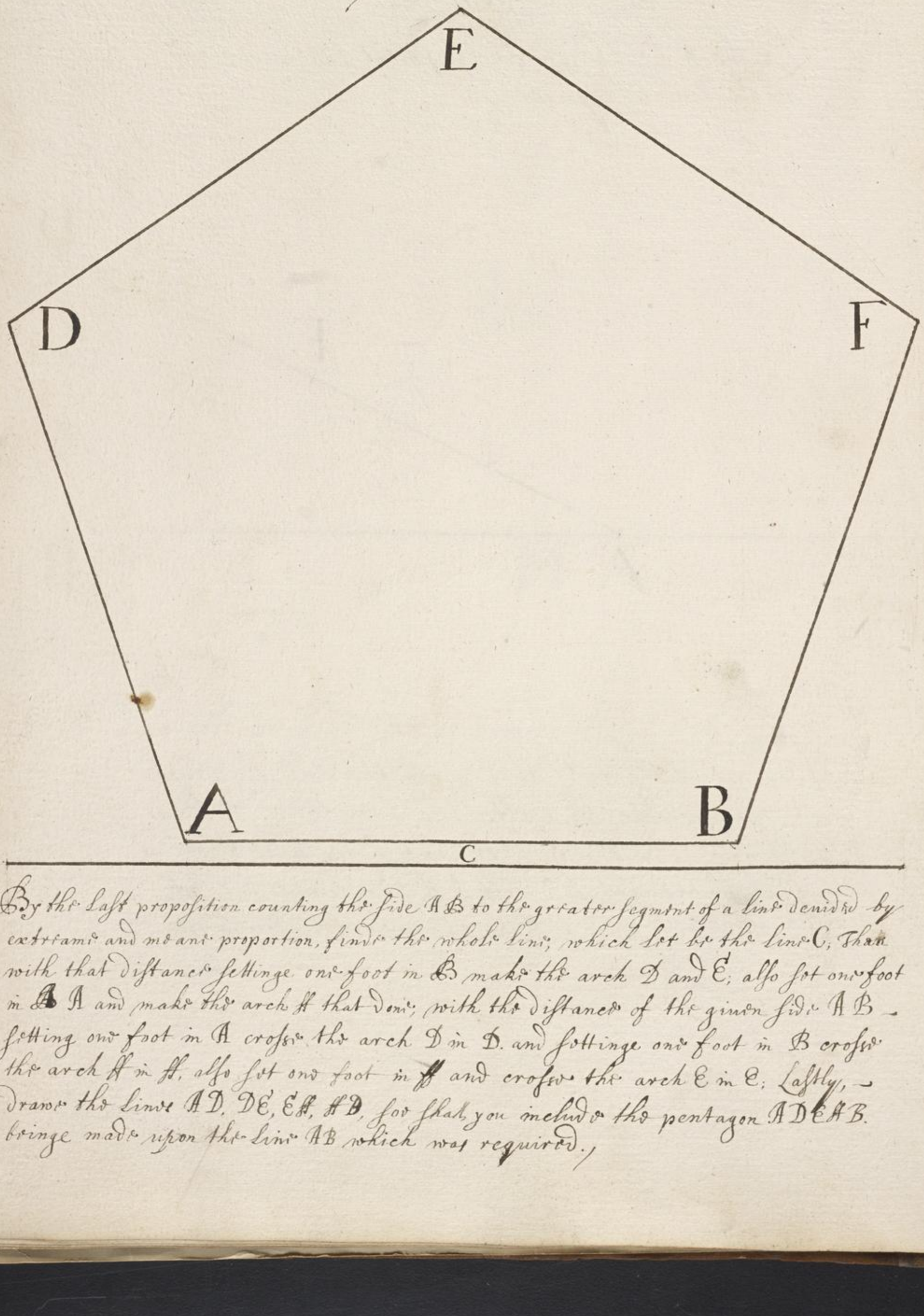


Increase B A to C. then upon the end B erect a perpendicular of halfe the length of A B as B D. and draw the Subtendant line A D. from which Substract D B rest A ff. that done set A ff from A to C so shall C B be the whole line required.

Prob: 29.

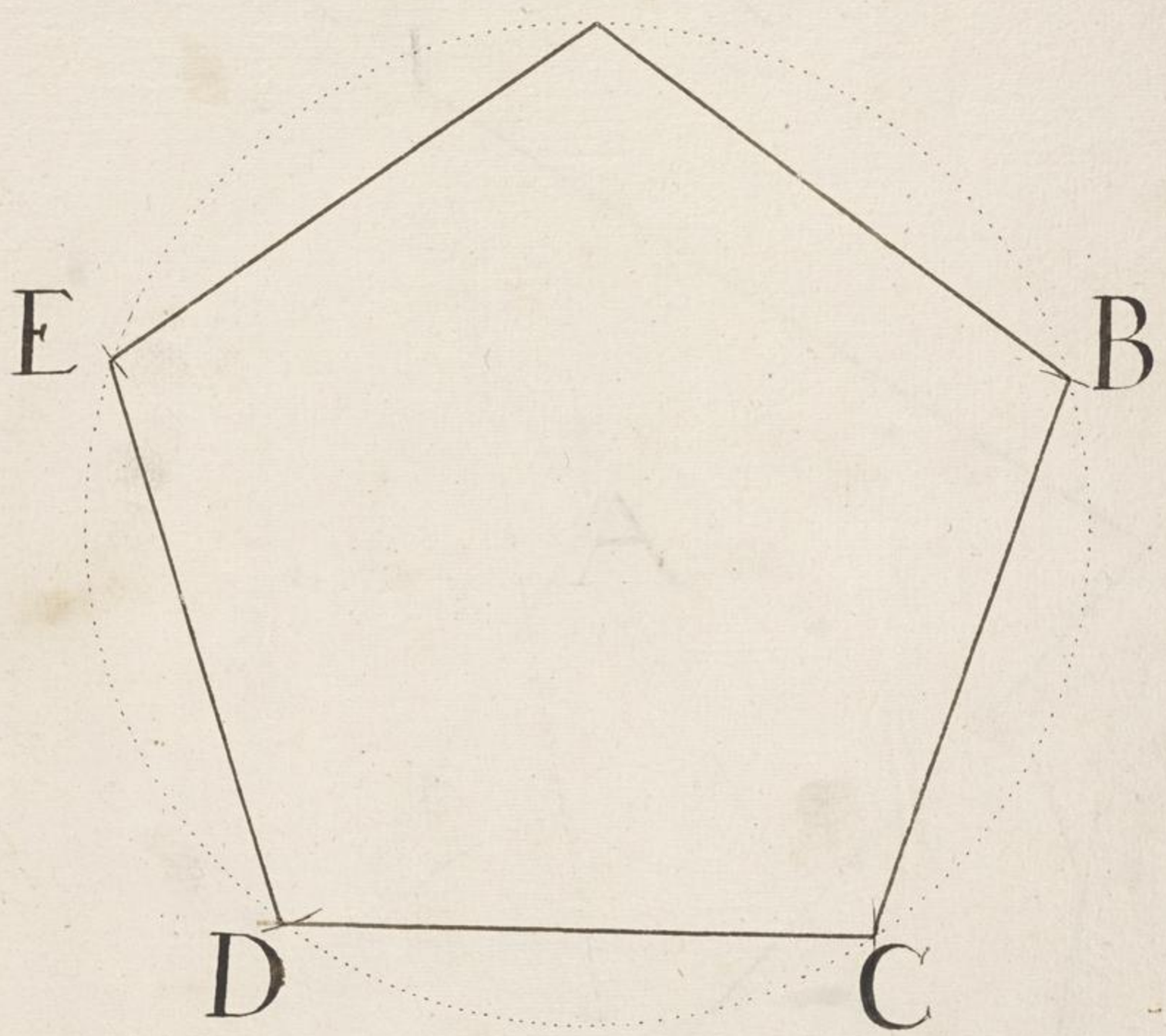
Upon a line giuen to discribe a pentagon.

Let A B be a line giuen whirrunto a pentagon is to be made.



By the last proposition counting the side A B to the greater segment of a line deuided by extreame and meane proportion, finde the whole line; which let be the line C, Than with that distance settinge one foot in B make the arch D and E; also set one foot in A A and make the arch ff that done; with the distance of the giuen side A B - setting one foot in A crosse the arch D in D. and settinge one foot in B crosse the arch ff in ff. also set one foot in ff and crosse the arch E in E; Lastly, - drawe the lines A D. D E, E ff. ff B, for that you include the pentagon A D E ff B. beinge made upon the line A B which was required.

To Discribe a Pentagon another way.

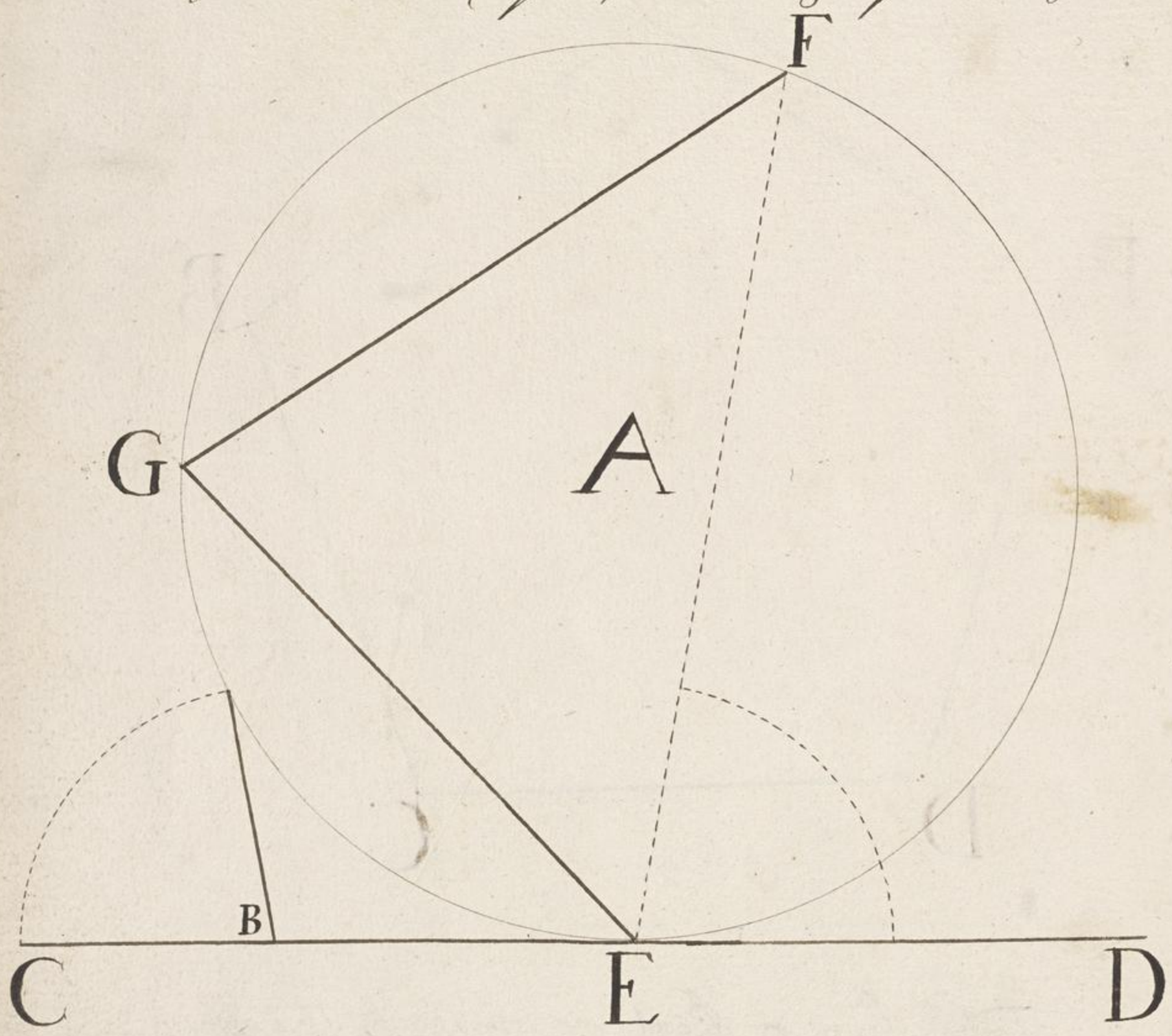


This Poligon or Pentagon is made by this obscure Circle, and by the eighteenth proposition findinge the fift part; which set fiue times abought in ye lymbe; as you see by the letters, A B C D E, and draw lines from point to point, soe shall you include a pentagon as A B C D E which was required.

Prob: 30.

From a Circle given to cut off a Section wherein may be placed an angle equall to an angle given.

Let A. be a Circle given from the which it is required to cut a Section wherein may be placed an angle equall to ye angle B.

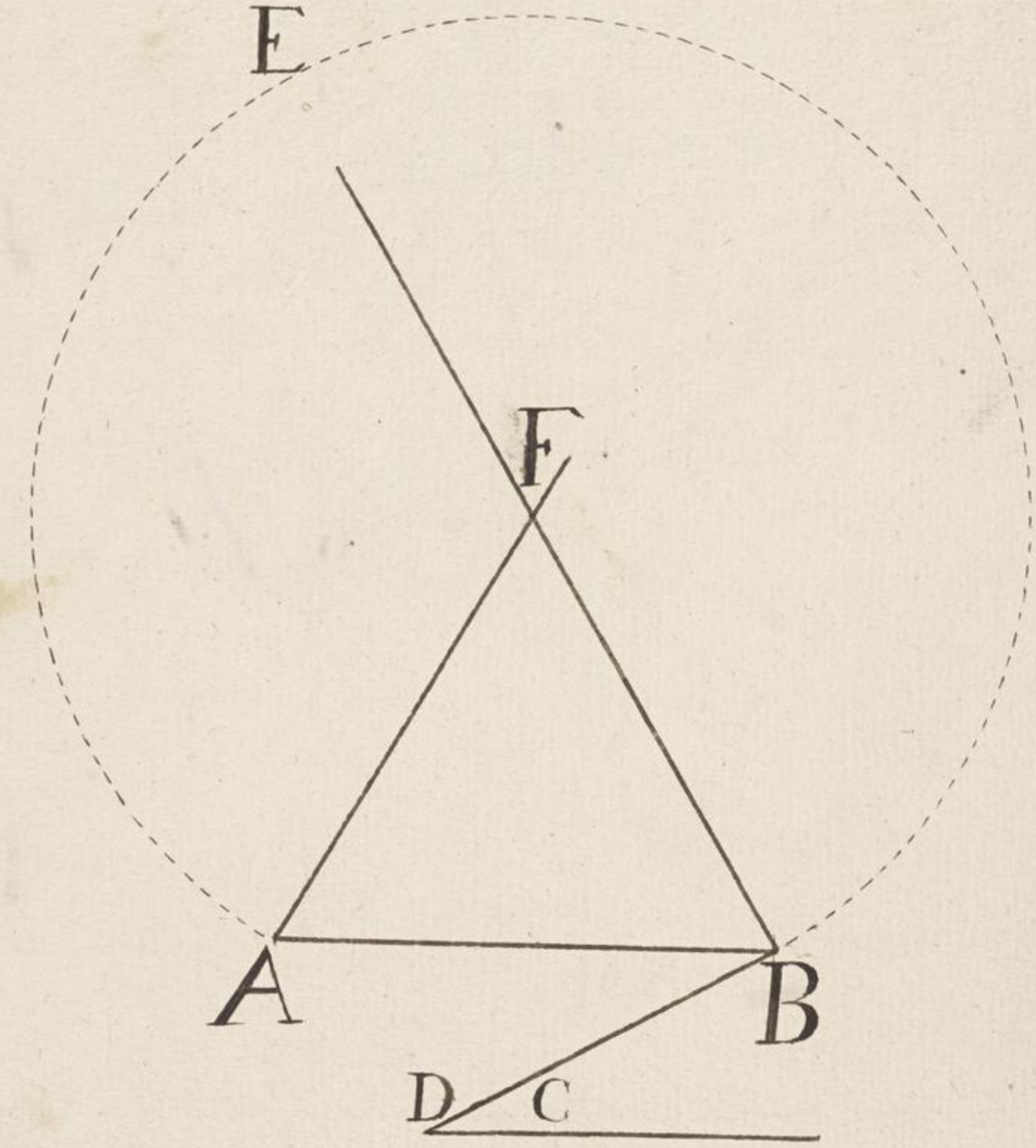


First draw a touch line by the 19th proposition as C D, which toucheth the Circle in E then upon the point E by the sixth proposition make the angle D E F, equall to the angle B, by drawinge the line E F, so shall the Section E F G. contayne an angle equall to the angle B required; so count E F the base of sume triangle, and then from the ends E and F draw lines to any point in the Cercomferens, as the lines E G, F G, meetinge in the point G, and then the angle G, shall be equall to the angle B as aforesaid.

Prob 31.

Upon a line given to discribe such a section of a Circle, as may contayne an angle equall to an angle given.

Let A B be a line given and it is required theron, to discribe a Section of a Circle that may contayne an angle equall to y^e^ angle C.

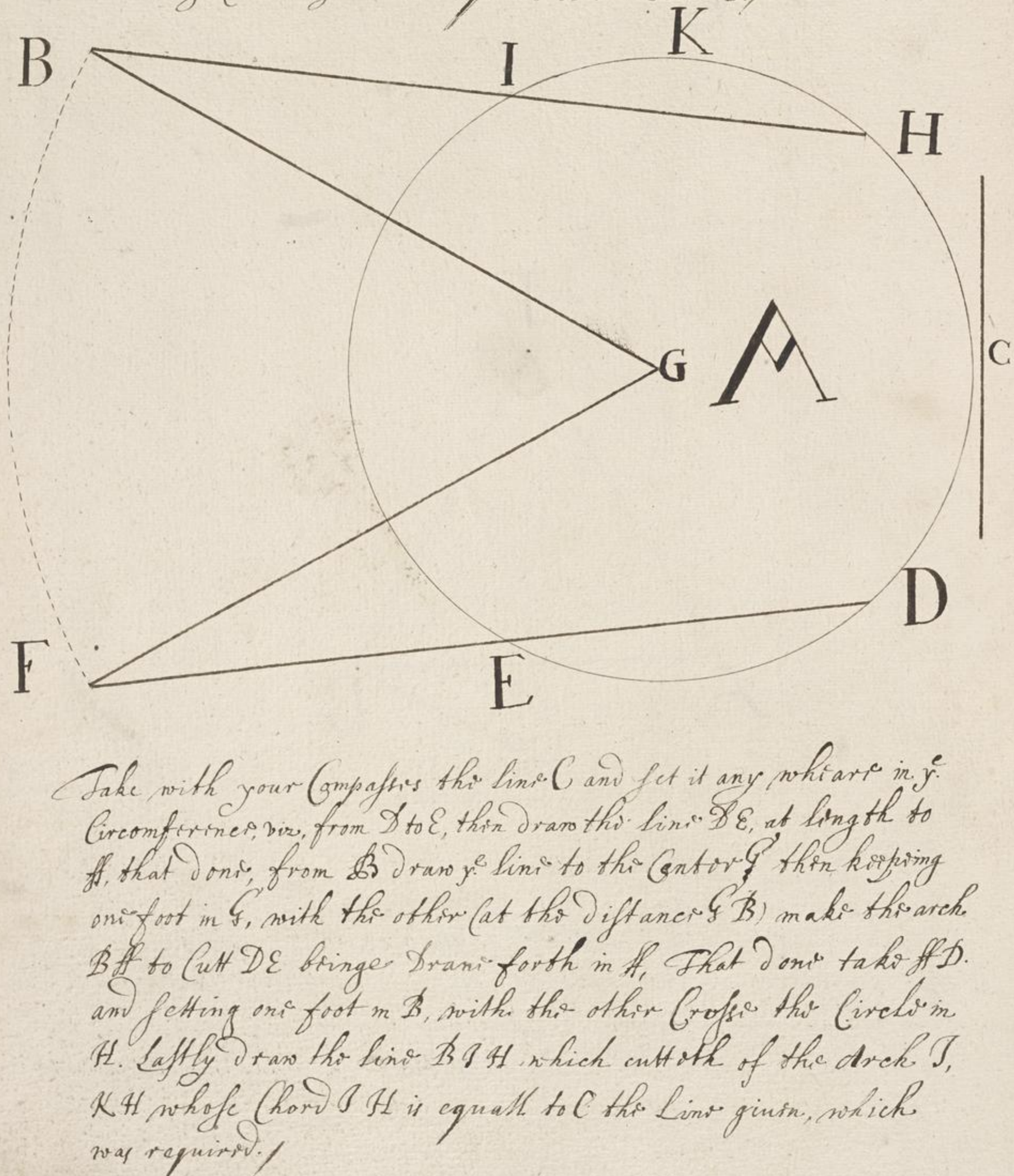


By the sixth proposion draw the line B D, making the angle A B D, equall to C the angle given, Then upon the point B erect a perpendicular to D B as B E, that done make the angle A A B equall to the angle A B E by drawing the line A A, which cutteth B E in A so shall A be the Center therefore set one foot in A and extend the other to any of the ends A or B and make the arch A E B which shall contayning an angle equall to the angle C required.

Prob: 32./

From a point assigned to drawe a line to cut of an arch of a Circle, whose chord shall be equall to a line given, the said Chorde being lesse then y^e^ Diameter of the Circle./

Let A, be a Circle given, and let B be a point assigned, from whence it is requitted to draw a line to cut of such an arch from y^e^ Circle whose Chorde shall be equall to the line C./

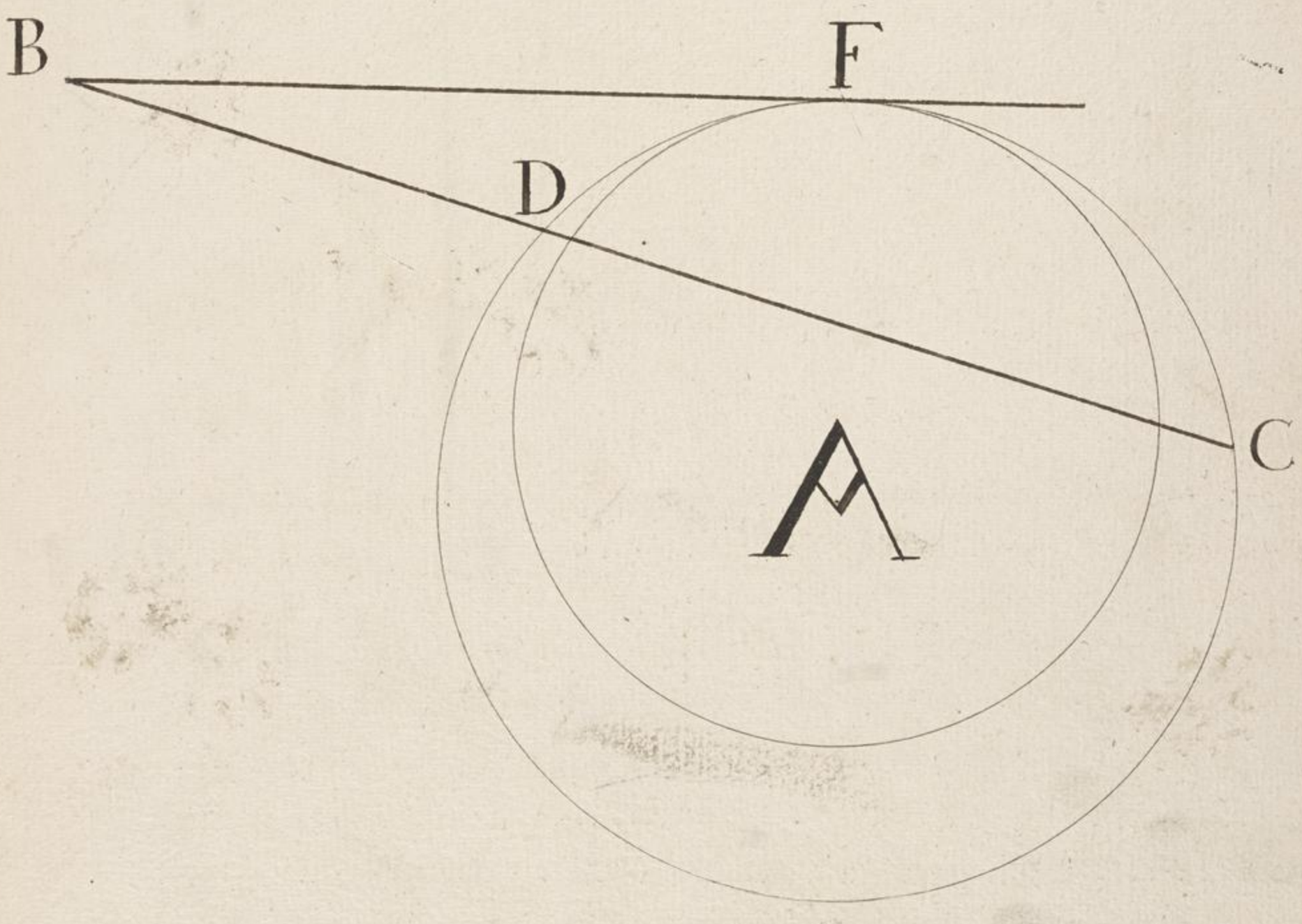


Take with your Compasses the line C and set it any where in y^e^ Circomference, viz, from D to E, then draw the line DE, at length to ff, that done, from B draw ye line to the Center G then keeping one foot in G, with the other (at the distance G B) make the arch B ff to Cutt DE bringe Drawn forth in ff, That done take ff D. and setting one foot in B, with the other Crosse the Circle in H. Lastly draw the line B I H which cutteth of the Arch I, K H whose Chord I H is equall to C the Line given, which was required./

Prob: 33.

ffro. a point without a Circle to draw a line cutting off an Arch in such sort, yt the Corde of ye Arch cut of shall bee a meani. proportion betweene the whole line drawne from the point to the farder side of ye Circumferenci, and the part of that line from ye point to the nerest side of ye Circumferenci wherin is to be noted, yt the point without must be so plased, yt a touch line drawne from it to ye Circle maynot exceed the diamiter of ye Circle.

Let A be a Circle giuen, and let B be a point assigned, from whence it is required, to draw a line as BC in such sorte yt CB shall be a meani. proportion betweene BD, and BC./

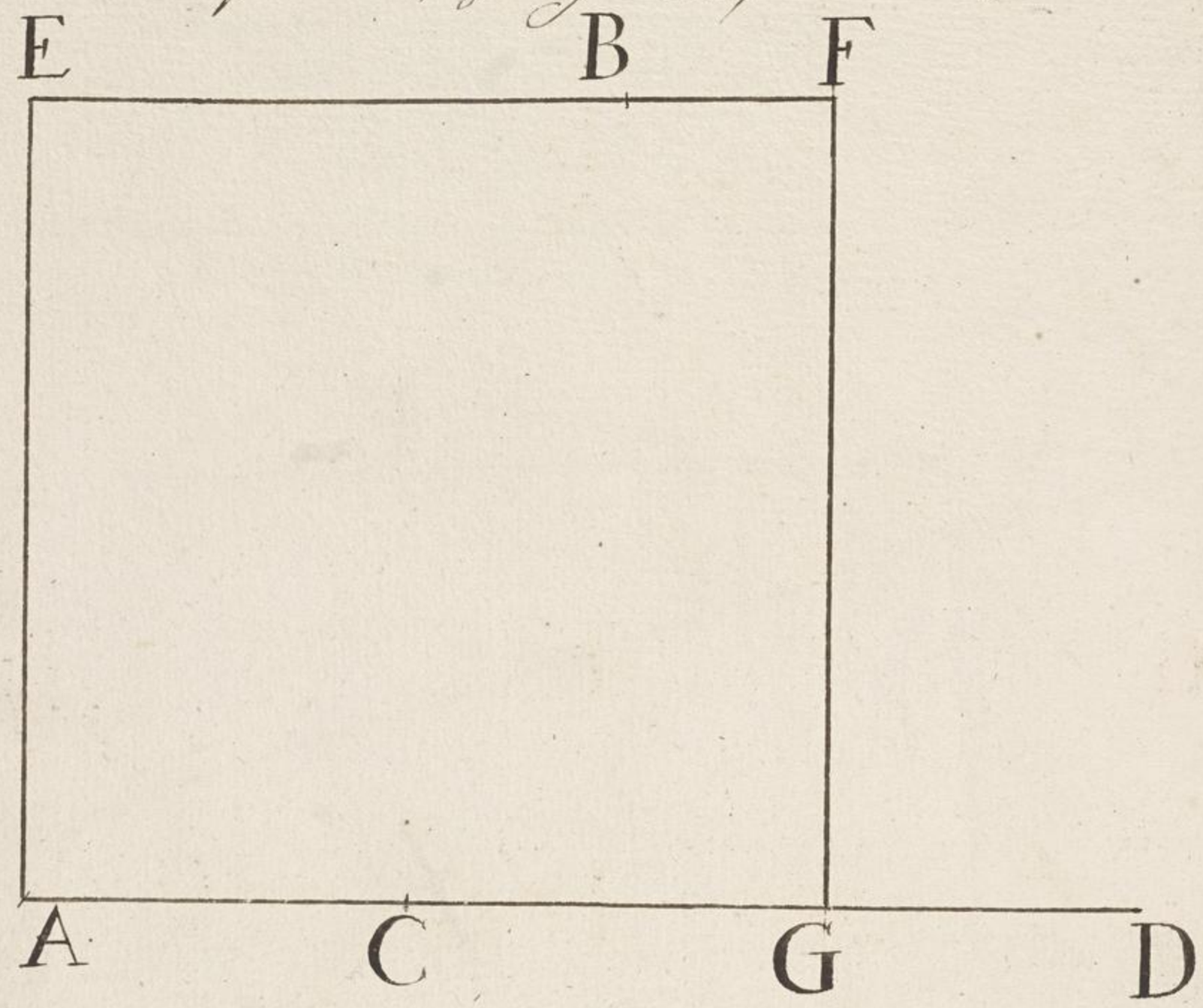


ffirst by from the point B draw by the 19.th propositon a touch line to the Circle, as BH, which touchith in the point H. That doni count BH the grater segment of a line deuided by extreami & meani proportion and then by the 20.th proposition find ye wholi line, which take and setting one foot in B, with the other crosse the Circle in C. Lastly, draw the line BC, which performeth your desire./

Prob: 34./

To make a Geomtricall Square to passe by any three points given./

Let A B C be three points given, and lit it be required to make a Square to passe by them./



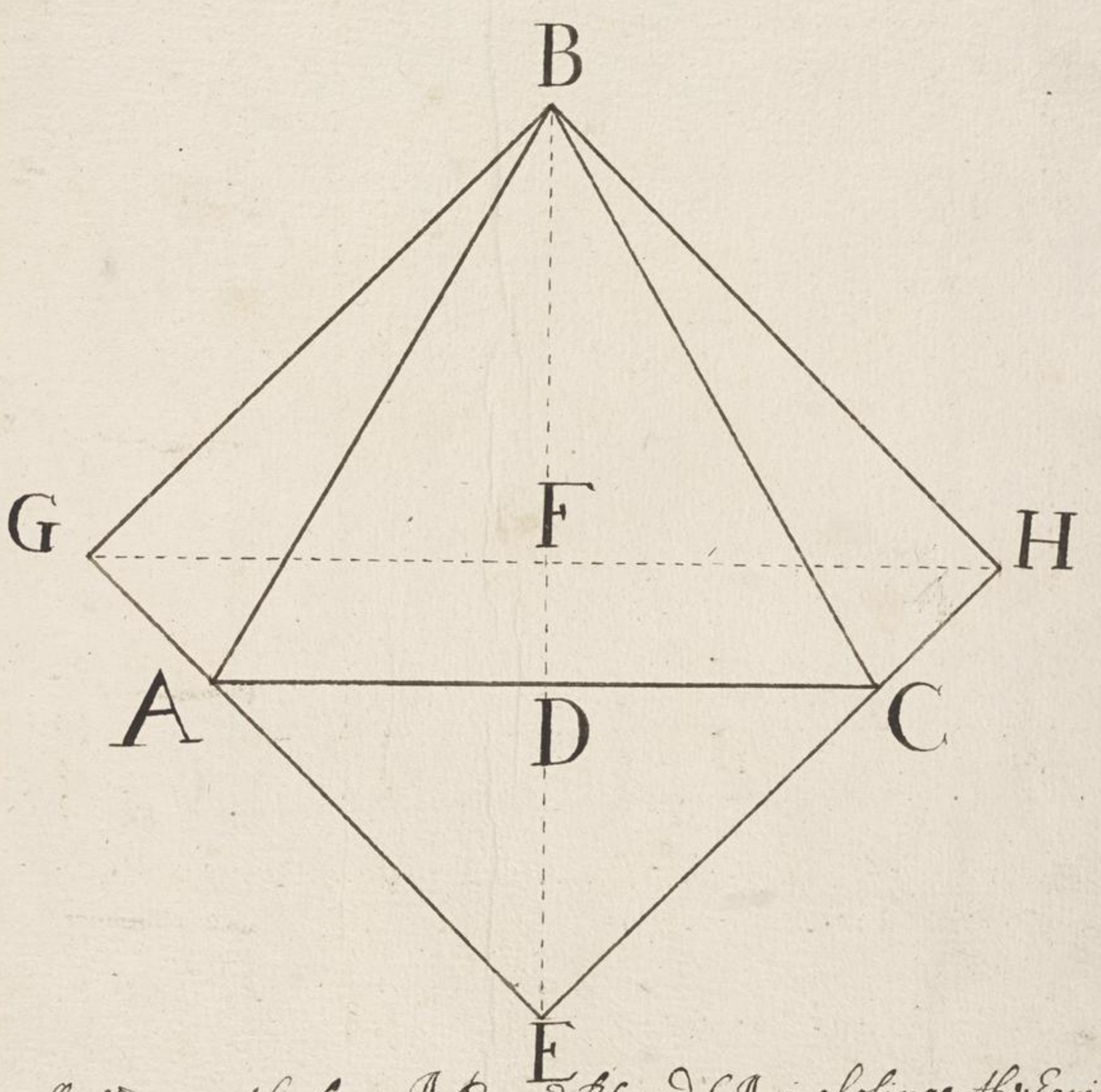
first by the points A C. draw a line at length as A D, that done by the point B draw a parralell (as Prob. 5.th) to A D. as E ff then from A let fall a perpendicular (Prob. 4.th) to E ff, as A E, which distance set upon the parralell E ff; from E to ff set it also from A to G and draw ff G, so shall you include the Square A E ff G, which shall passe by the three points A B C required./

If the three points weare an equilaterall Triangle it weare not so easie; wherefore I will shew how it may be done two of the best ways./

Prob: 35.

To make a geometricall square to passe by
the three points of an Equilaterall
Triangle.

Let A B C. be the three points given by which a Geometricall
Square is to passe. /

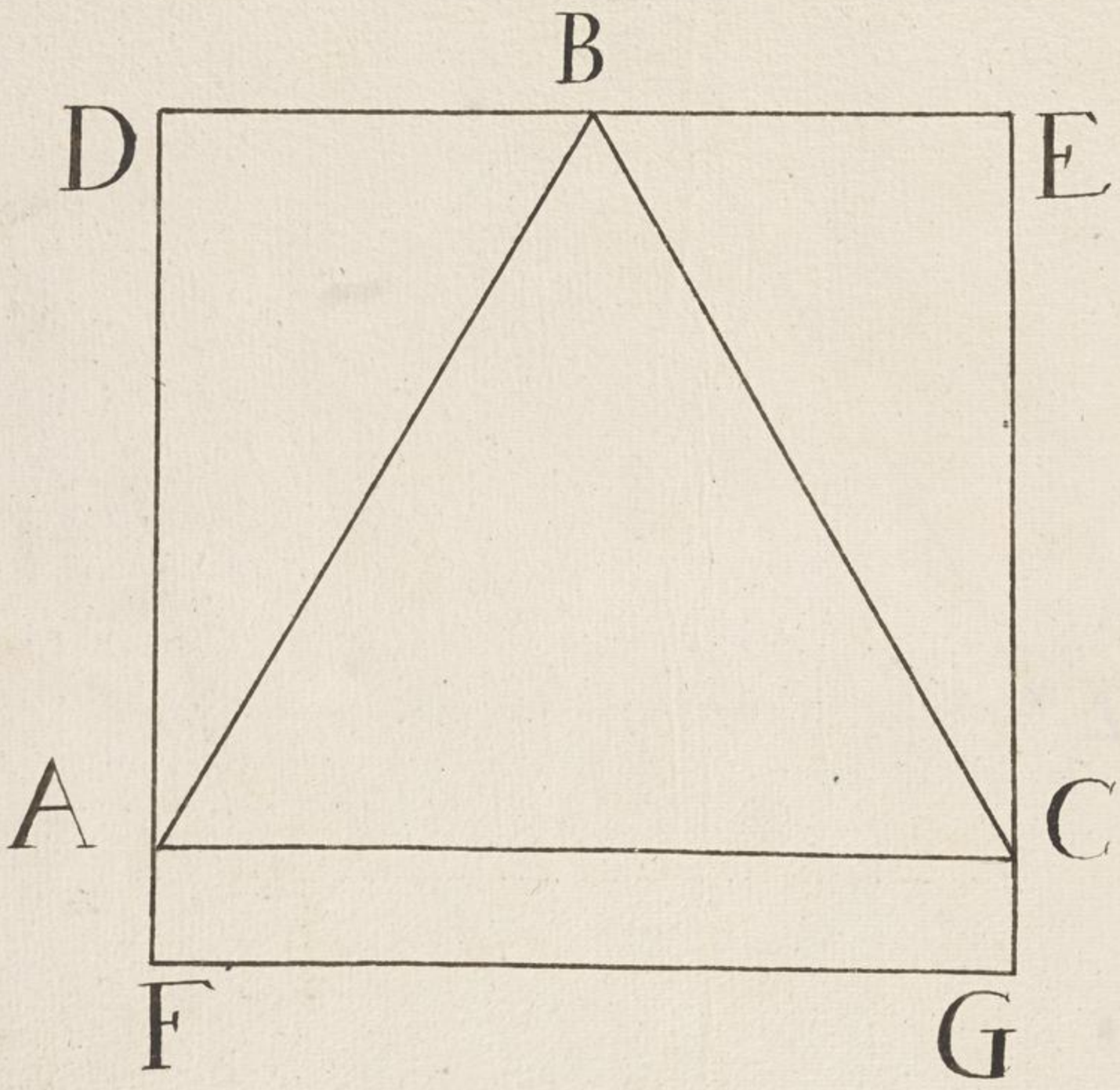


first draw the lines A B, and B C and C A inclosinge the Equilaterall Triangle A B C, then from the point B let fall a perpendicular, (Prob: 4.) as B D which increase to E so that D E may be equall to D C, or D A. the halfe of the side A C. That done; devide the whole line B E, into two equall parts at right angels Prob: 1. in K by the line G H, then set always halfe B E, from K to G, and to H, Lastly draw the lines B H. H E, E G and G B so shall you include a square that shall passe by the points A B C, required. /

Prob: 36.

Another way to make a Geometricall square to passe by the three points of an Equilaterall Triangle.

Let A B C, be three points given, by which it is required to make passe a Geometricall square.

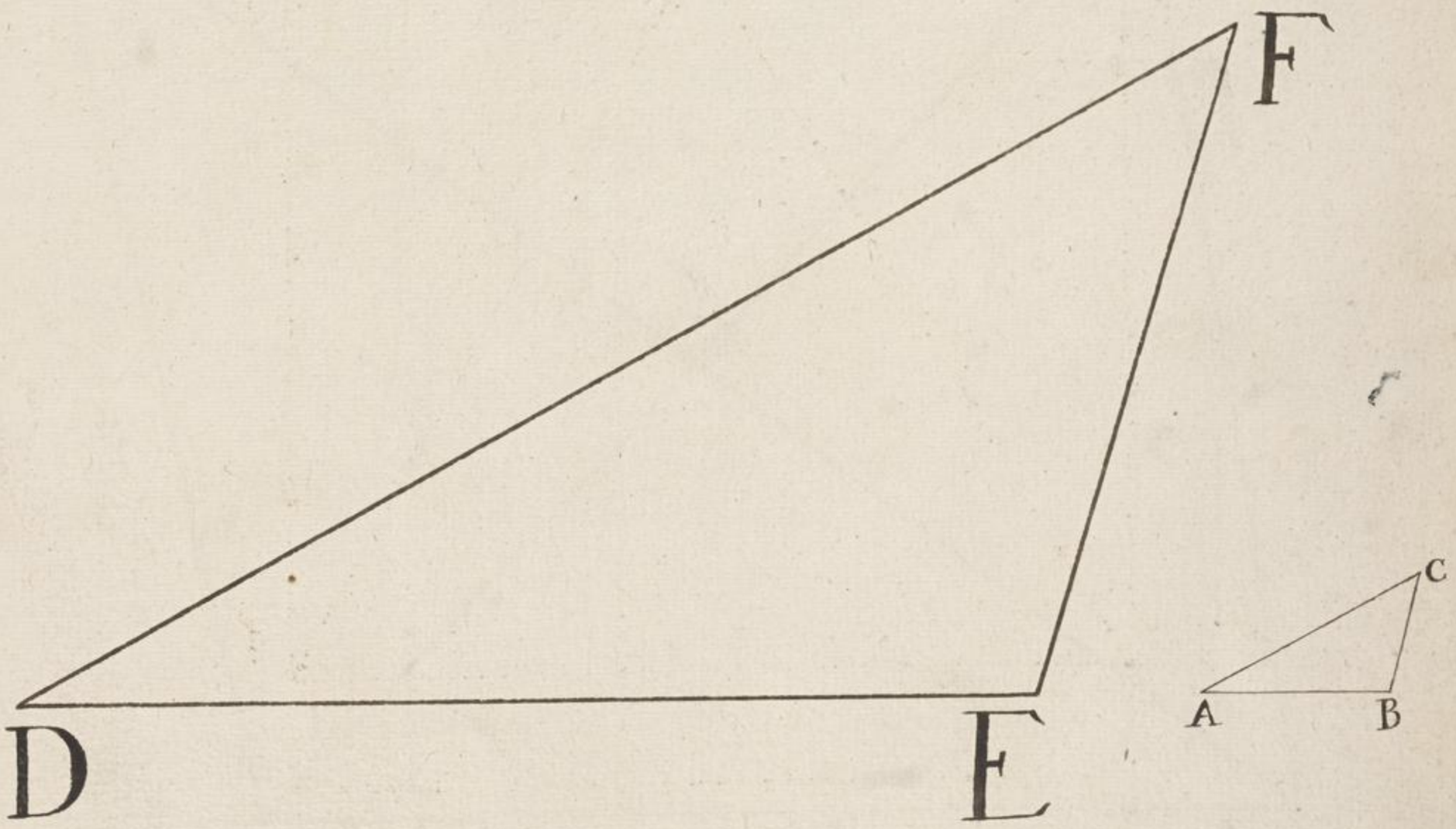


First draw lines from point to point, making the Triangle A B C, That done, by B draw a parralell to A C as D E, then from A let fall a perpendicular upon the said D E, as A D, which increase downwards to F, then set the distance A C from D to F, and therwith make the square D E G F, which shall passe by the three points A B C, required.

Prob 37.

To make a Triangle, like a triangle given with all his angles, whose base shall be equall to a Line given.

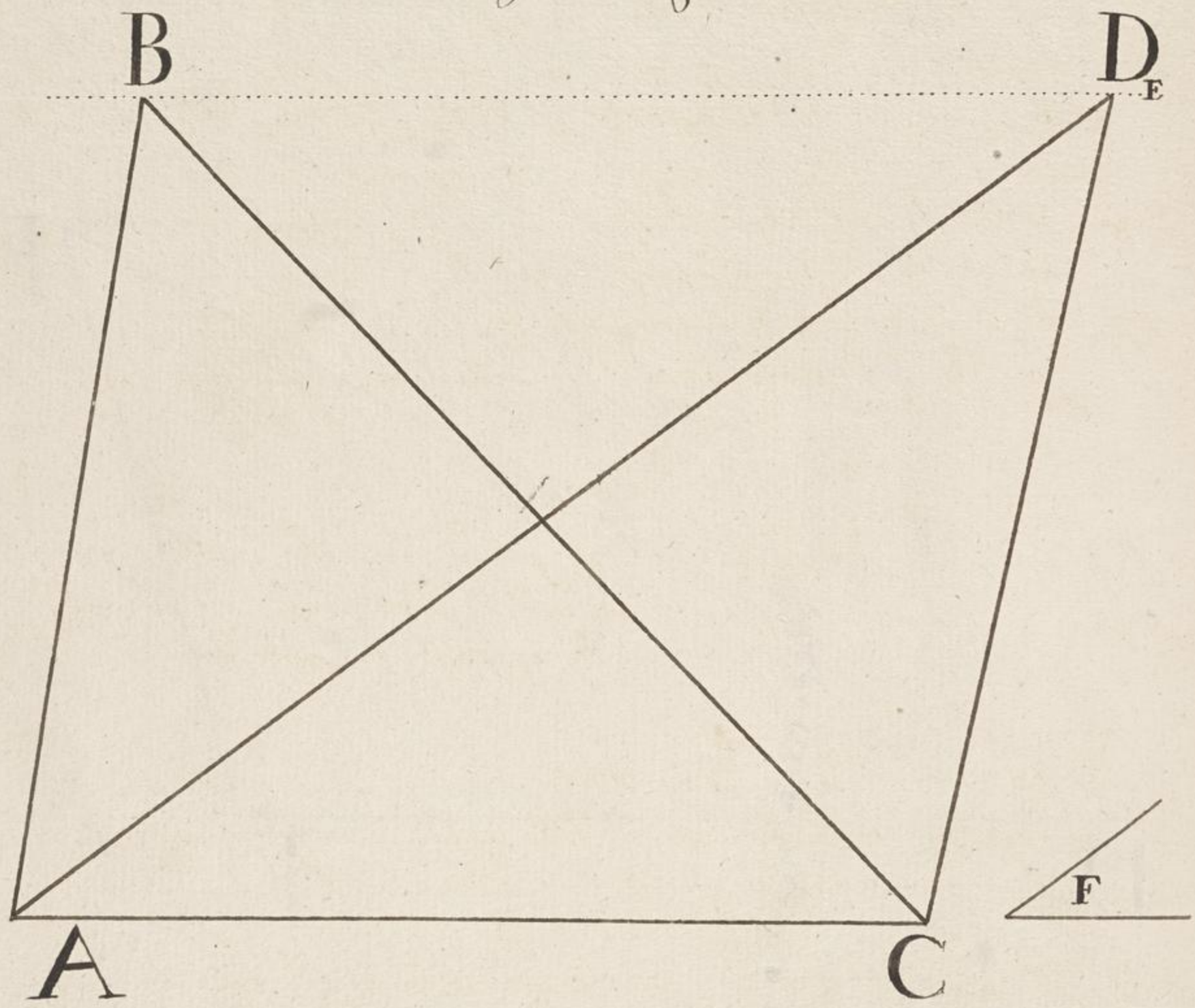
Let A B C be a Triangle given, and let D E, be a Line given, now it is required to make another triangle like the triangle A B C whose base shall be equall to the line D E.



By the first proposition from the end D protract an angle equall to the angle A, as E D ff, then from the end E protract an angle equall to the angle B as D E ff which shall meete the Triangle D E ff, like A B C. upon the base D E which was required.

Prob: 30./

In this Diagram. followinge there is a triangle as A B C, now there is drawne a line at pliasure, as C D. makinge the angle A C D, and it is requir'd from A to draw a line to some part of C D as A D (in which such sort) that y^e Triangle A C D may be equall to y^e giuen Triangle A B C./



By the point B drawe a parralell to the base A C, as B D, to cutt C D in D, then drawe from the angle A a line to the point D, as A D, soe shall you inclose the triangle A C D equall to the triangle A B C wch was required./

Prob 39.

To reduce a Triangle into another Triangle hauinge the same base but other angles.

In the formar diagram let ABC be a triangle giuen and it is required to reduce the same into another triangle hauinge the same base, but any other angles.

By the second way of the 5.th propositon draw from the point B a parralell to the base AC as BDE then from A on the one end of the base, draw a line to any point in that parralell, as the line AD to the point D, Lastly from the other end C draw to the same point D the line CD so shall the triangle ACD be equall to y.e triangle ABC hauing the same base viz AC. but other angles which was required.

Prob: 40.

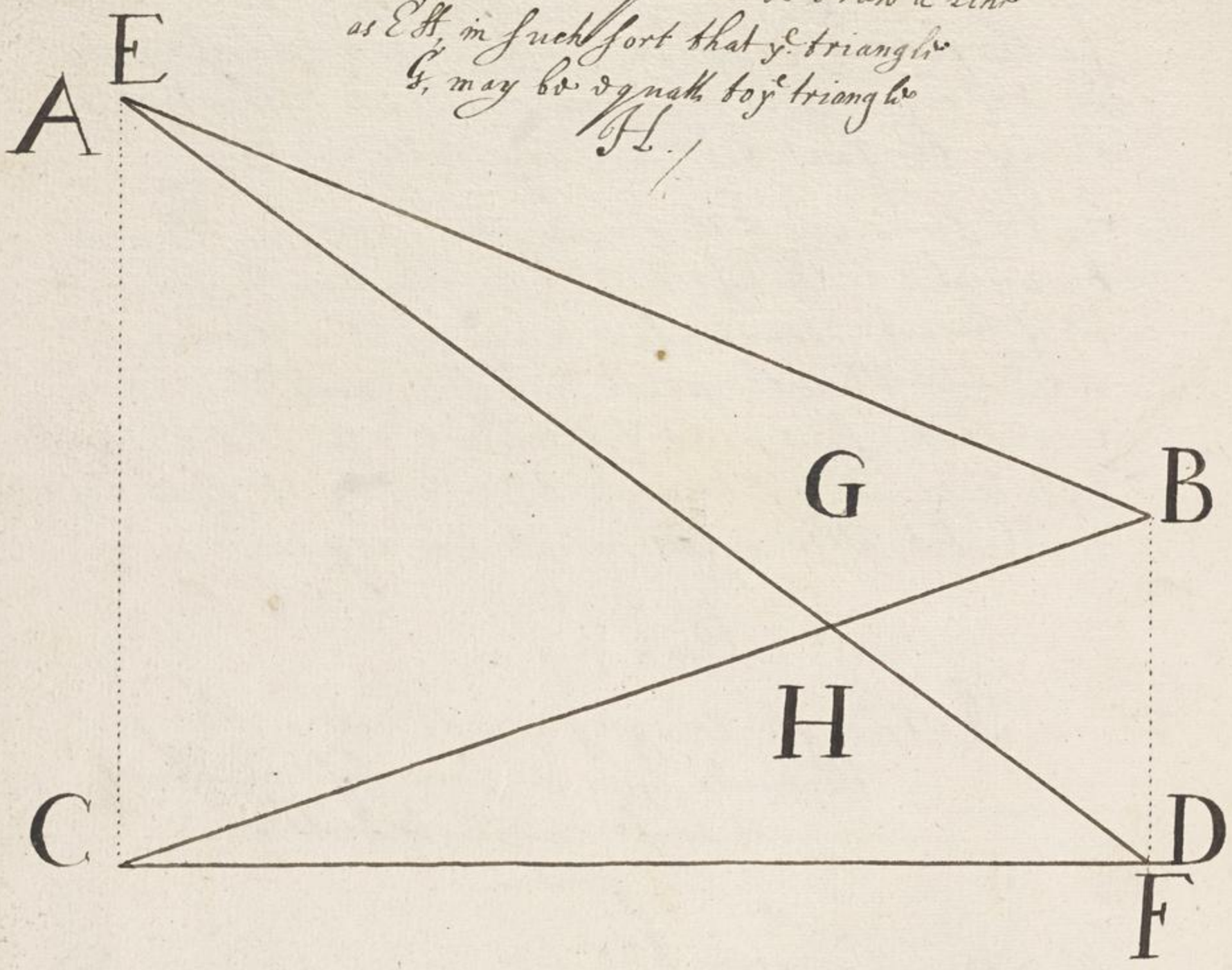
A Triangle being giuen to make another equall thereunto upon the same base, and hauing an angle equall to another giuen.

Let in the Last diagram ABC be a Triangle giuen and it is required to make another equall thereunto, upon the same base, but hauing one angle equall to the angle ff.

First by the top B draw a parralell to the base AC by the second way of the 5.th proposition as BE then by the 6.th proposition from the point A make the angle CAD equall to the angle ff. and draw the line AD till it touch the parralell BE in D, Lastly draw the line CD so shall you include the triangle ADC equall to the triangle ABC (as CAD) equall to the angle ff required.

Prob 11.

Let AB. BC. and CD be three lines giuen making the two angels ABC and BCD. and let E be a point assigned from whence it is required to draw a line as EH, in such sort that y^e^ triangle G, may be equall to y^e^ triangle FL.



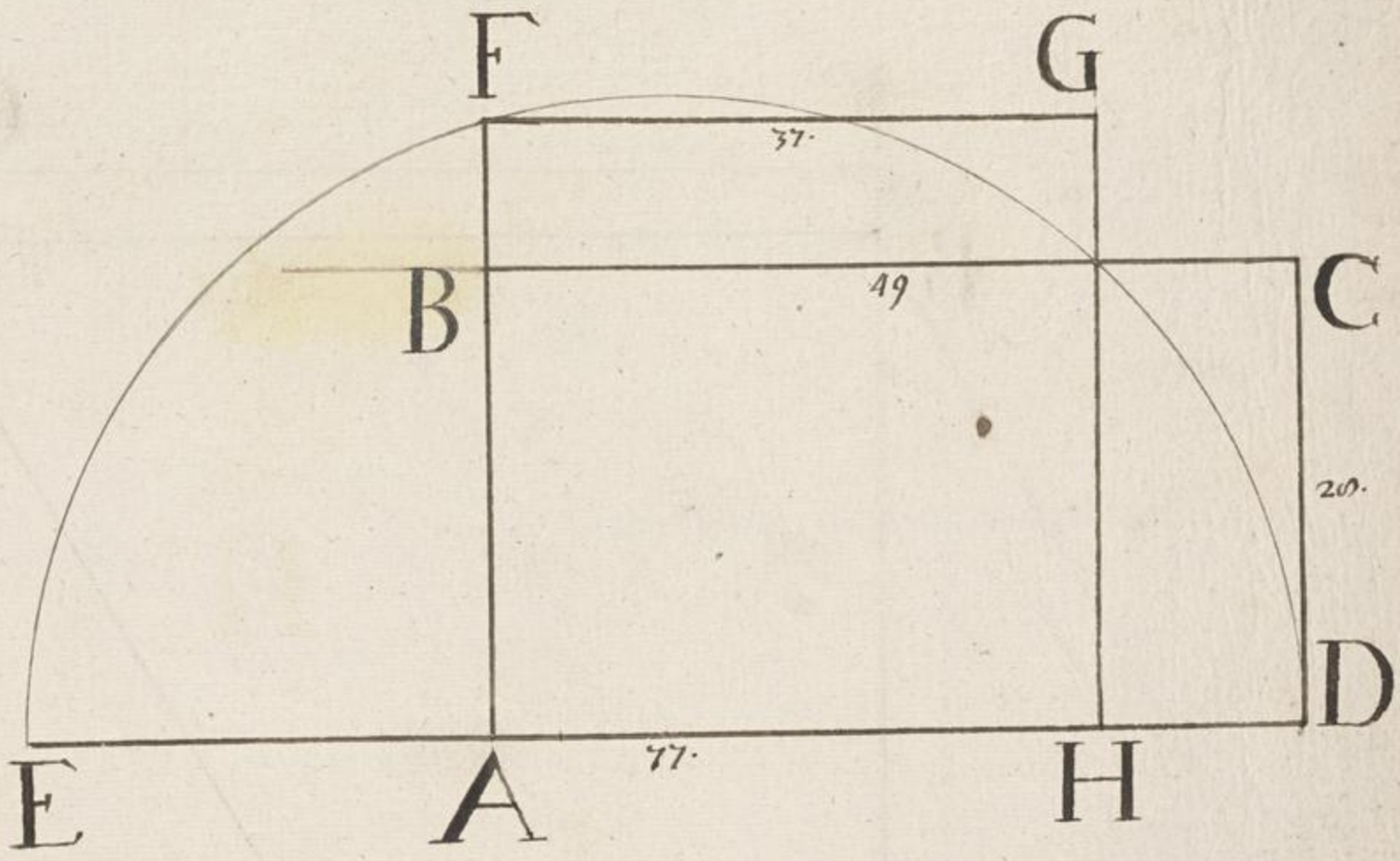
First, from the point E. drawe an Obscure line to C, as the pricked line EC, then by the 31.th proposition from B draw a parralell thereunto as BF. which cutteth CD in F. Lastly draw the line EH, which performeth the desire.

These foure last Problemes haue there demonstration out of the 37.1 of Euclid.

Prob 42./

To reduce a longe square into a Geometricall square./

Let ABCD be a longe square given to be reduced into a Geometricall square./

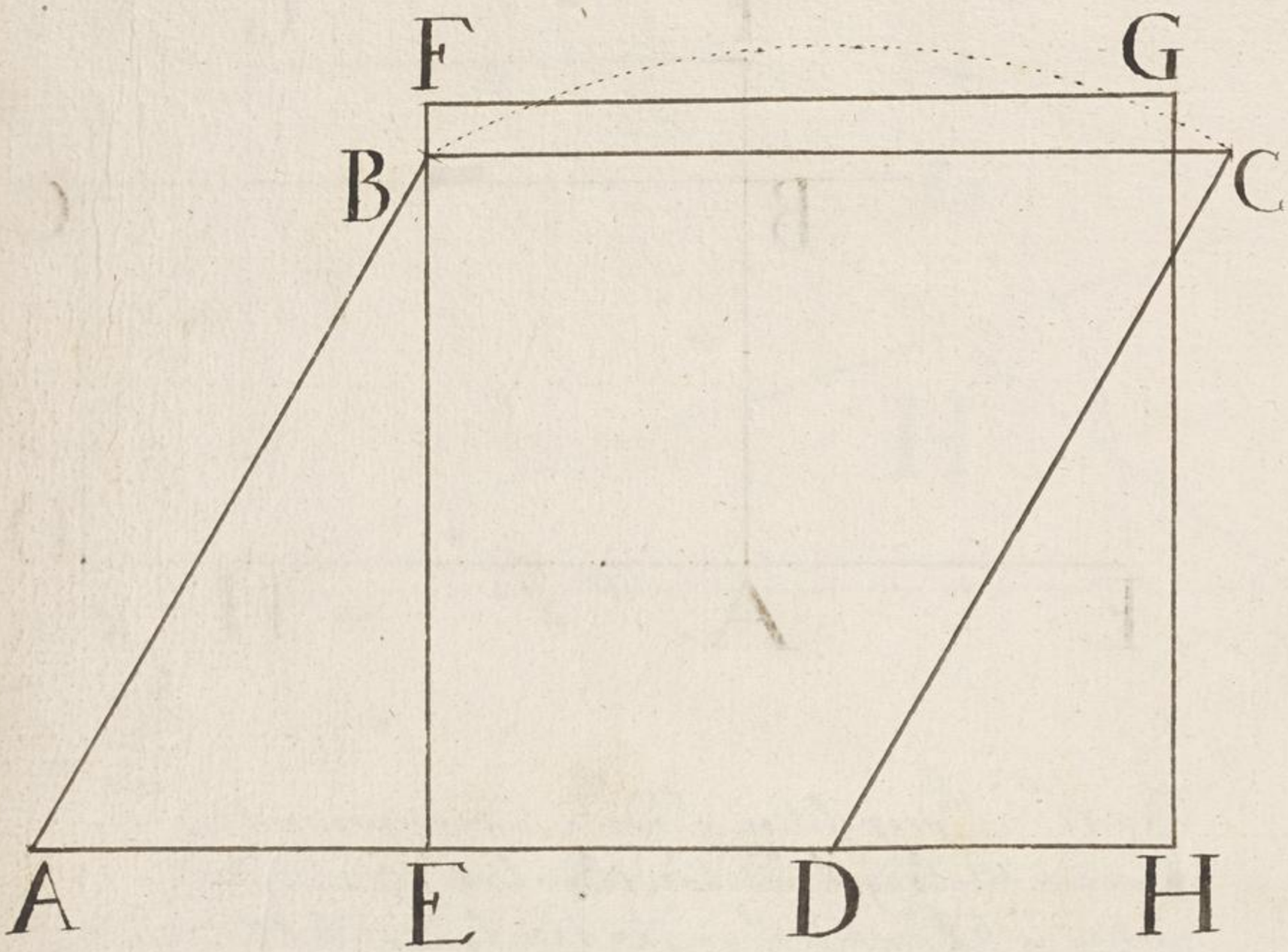


By the 24.th proposition finde a mean proportion betweene the length and brodth which mean proportion is AE. whereof make the square AEFH by the 19.th proposition, which shall be equall to y.e longe square ABCD required./

Prob 43.

To reduce a Rombus into a Squar.

From one of y.e obtuse angles, Let fall a perpindicular to the base: Then finde a mean proportion betwixt y.e perpendicular and the base, and that shall be the side of a Squar equall thereunto.

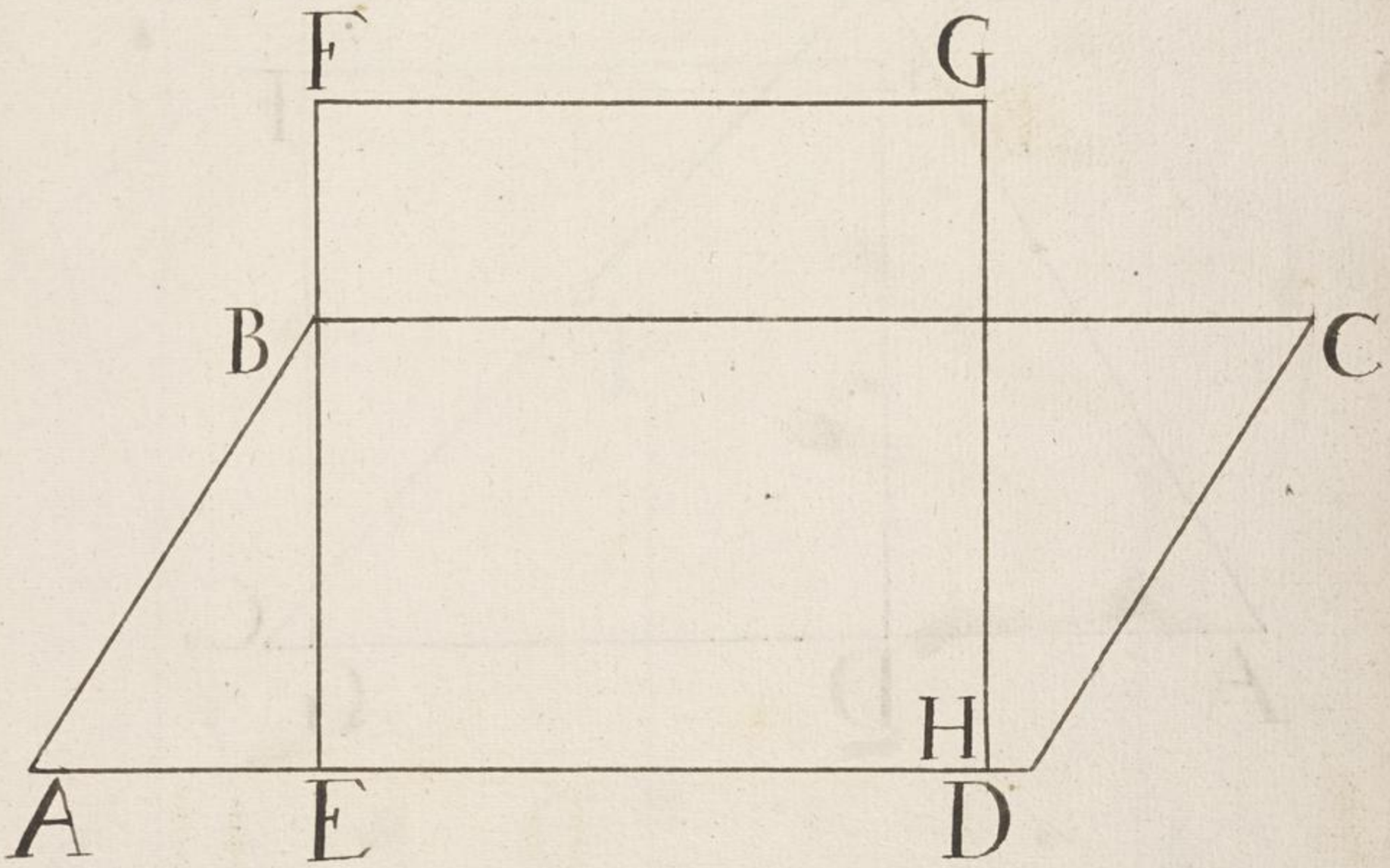


As for example ABCD being the Rombus and EFGH, the Squar equall thirunto.

Prob 44.

To reduce a Romboides into a Square.

From one of the Obtuse angles Let fall a perpendicular upon the base (which must be one of the longest sides) then betweene that perpendicular and the said base finde a mean proportion, which shall be the side of a Square equall thereunto.

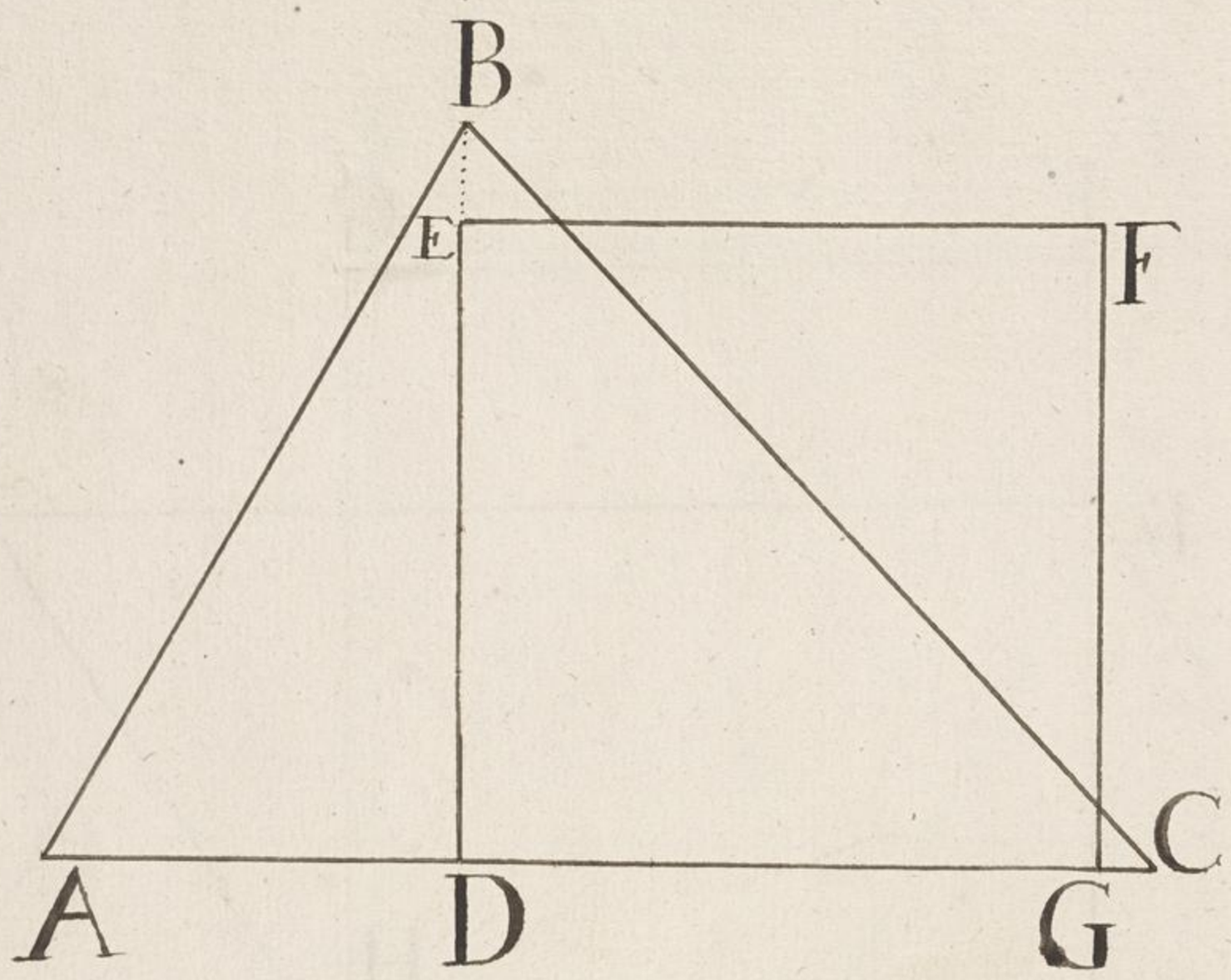


For excample A B C D, bringe the Romboides and E F G H the Square thereunto.

Prob 45./

To reduce a Triangle into a Square./

Let ABC be a Triangle given, to be reduced into a Square./

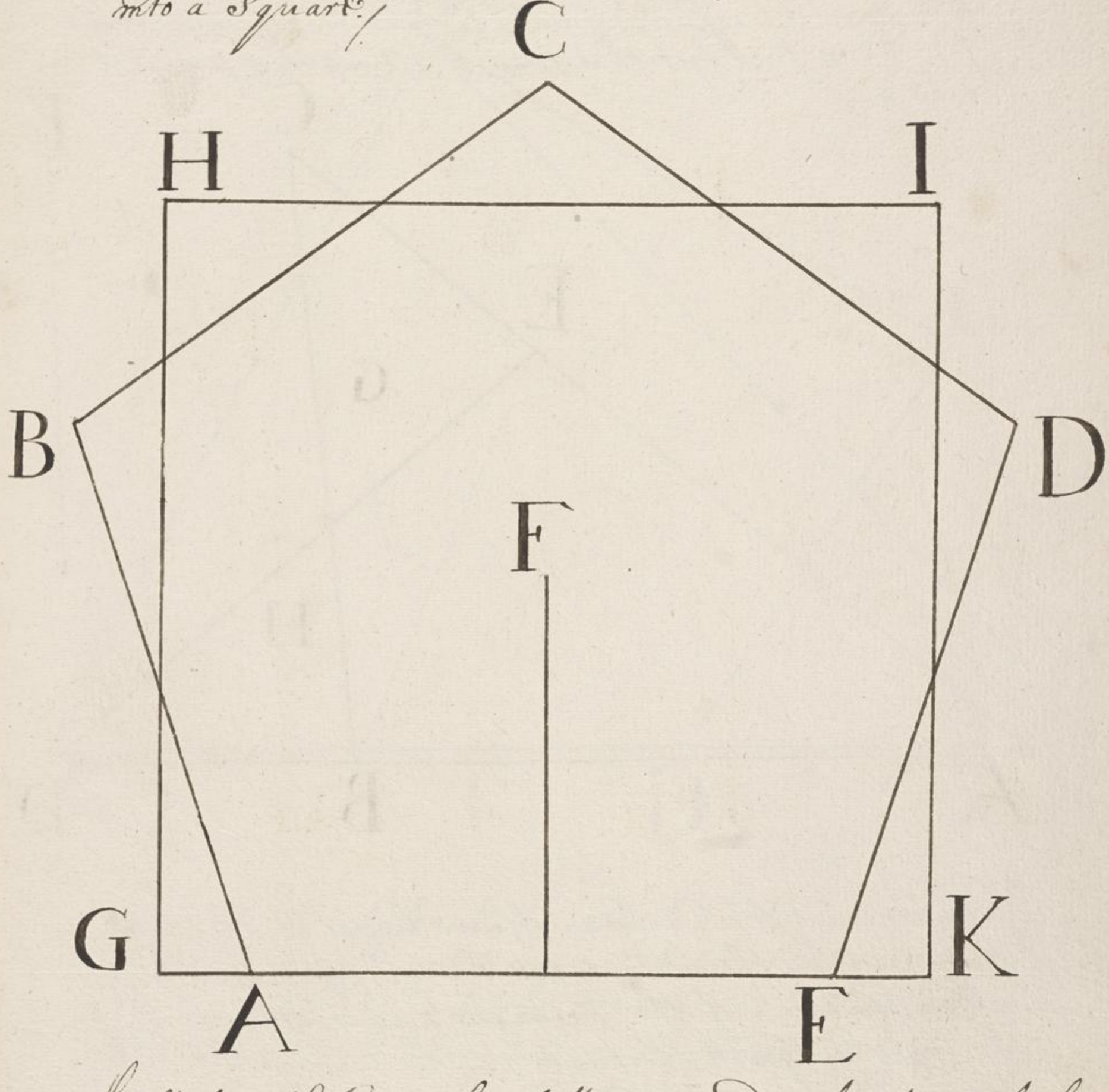


First from the angle B let fall a perpendicular to the base AC as BD Then by the 24.th and 25.th position find a mean proportion between the said perpendicular and the half base, which will be DE whereof make the Square DEFG, which shall be equall to the Triangle required./

Prob 46/

To reduce a Poligon consisting of equall sides and angles into a Square/

Let A B C D E be a Poligon given of fiue equall sides & angles (more properly called a Pentagon) to be reduced into a Square/



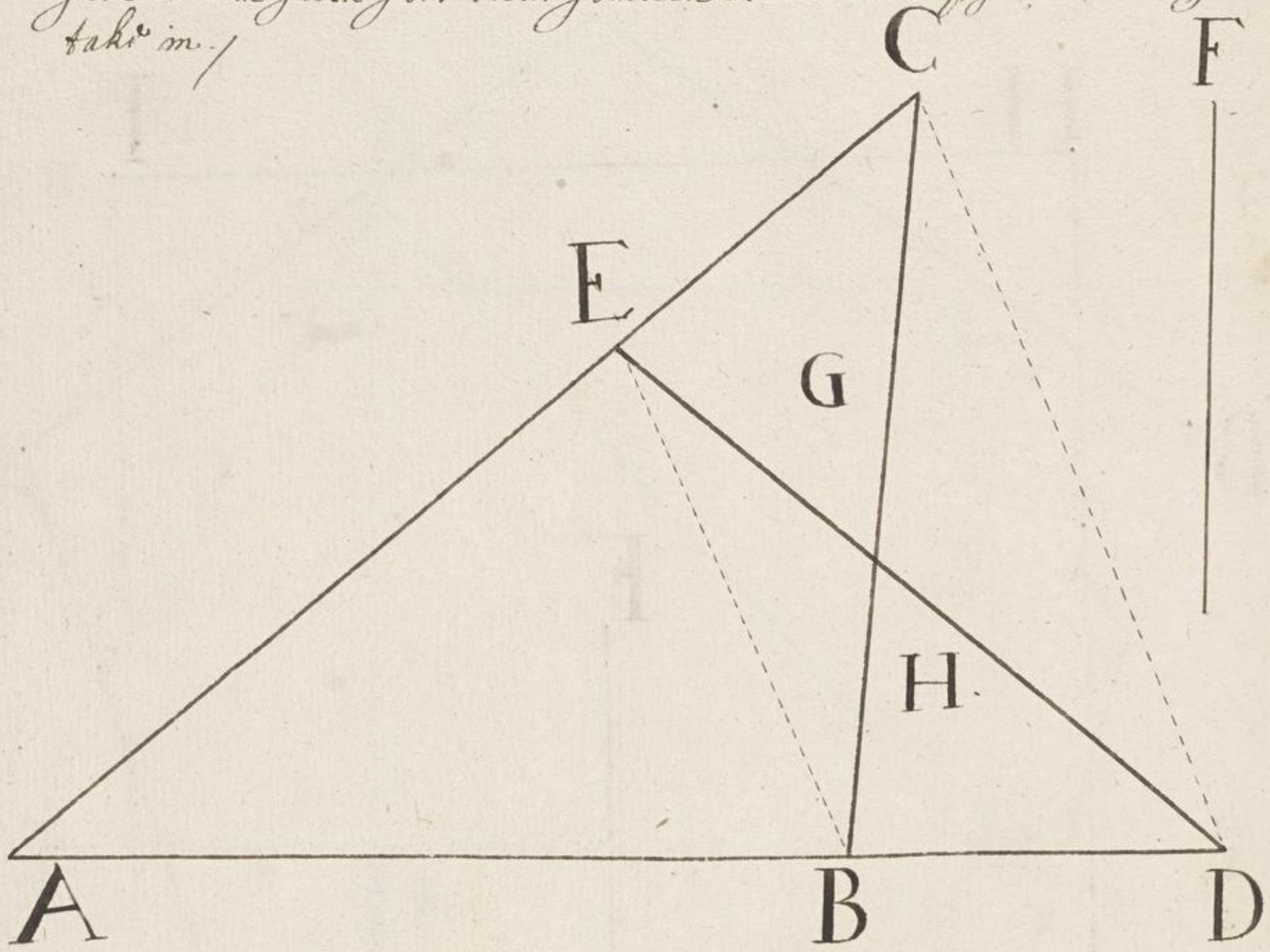
first from the Center; let fall a perpendicular to one of the sides as G K, Then betwixt that perpendicular and the halfe Perimiter, finde a meane proportion. by the 24.th and 25.th proposition which shall be the side of a Square equall thereunto as G H I K,

These fiue last Problemes haue there demonstration out of the 14.th of the 2. of Euclid/

Prob. 47.

ffrom a point in any side increasd. of a Triangle giuen, to draw a line to the oposite side through ye side next the point to include ye Triangle giuen.

Let ABC be a triangle giuen, whose base A B. runneth forth to D, Nowe it is required from D to draw a line to some part of ye side AC in such sort that somuch as it cutteth of, so much it may take in.



ffrom the point D to E draw an obscure line as DC then by B draw a parralell thereunto, to cutt AC in E Lastly draw DE. which shall cutt of the Triangle G and take in the Triangle H equall thereunto.

Prob. 48.

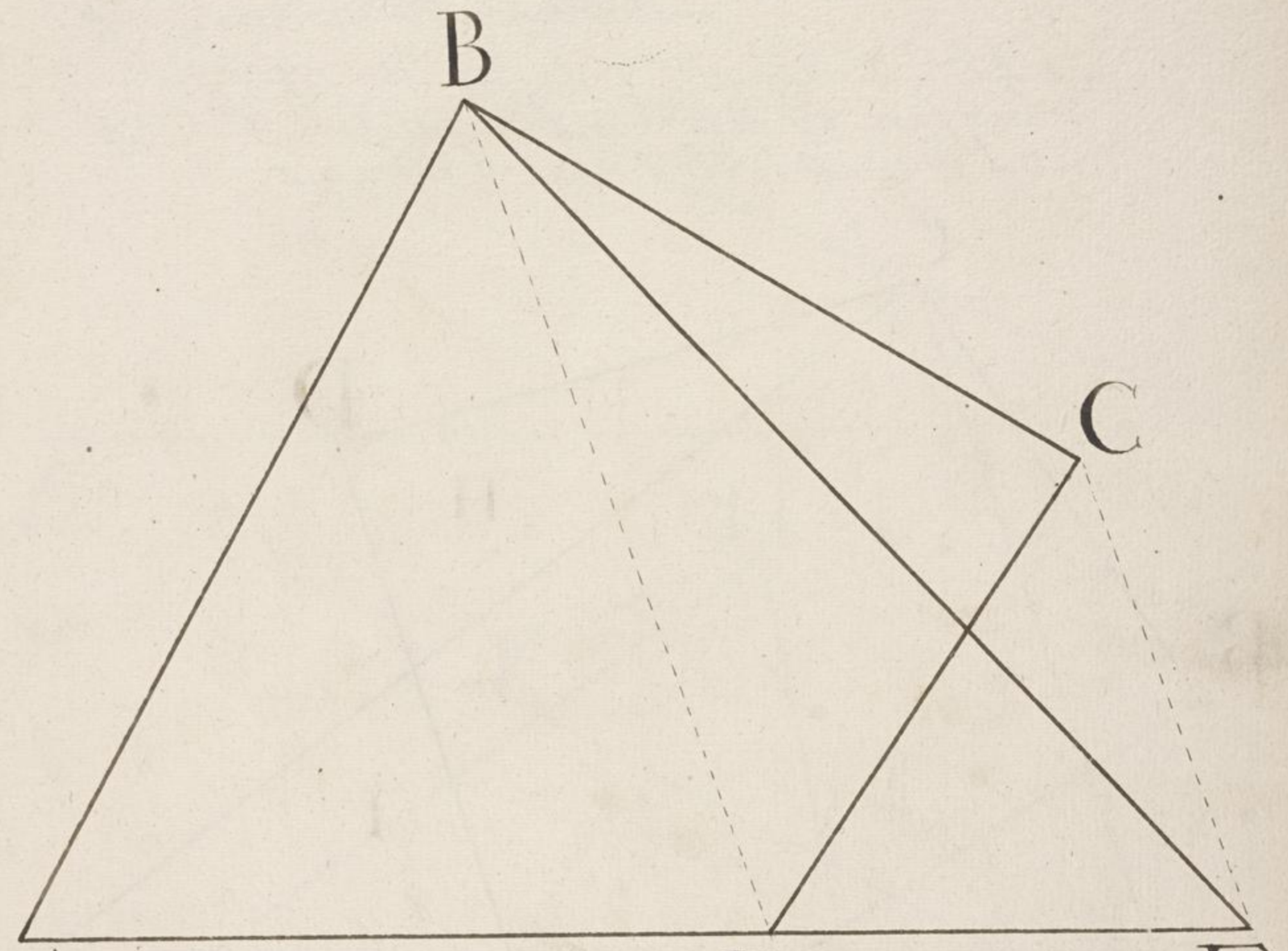
A triangle being giuen, to make another equall thereunto, whose base or perpendicular is limited.

Let ABC, be a triangle giuen, and it is required to make annother equall thereunto whose perpendicular shall be equall to the line F. At the distance of the line F, draw a parralell to the base AD which cutteth the side AC, in E then increase the base AB, at length to D, that done, draw EB then by the point C draw a parralell thereunto as CD. to cutt the base beinge increased in D. Lastly draw ED, soe shall you include the Triangle AED, equall to ACB, (for there is cutt of ye Triangle G, and taken in the Triangle H equall thereunto.

Prob 19.

To reduce a Trapezia into a Triangle.

Let A B C D, be a Trapezia given to be reduced into a Triangle.

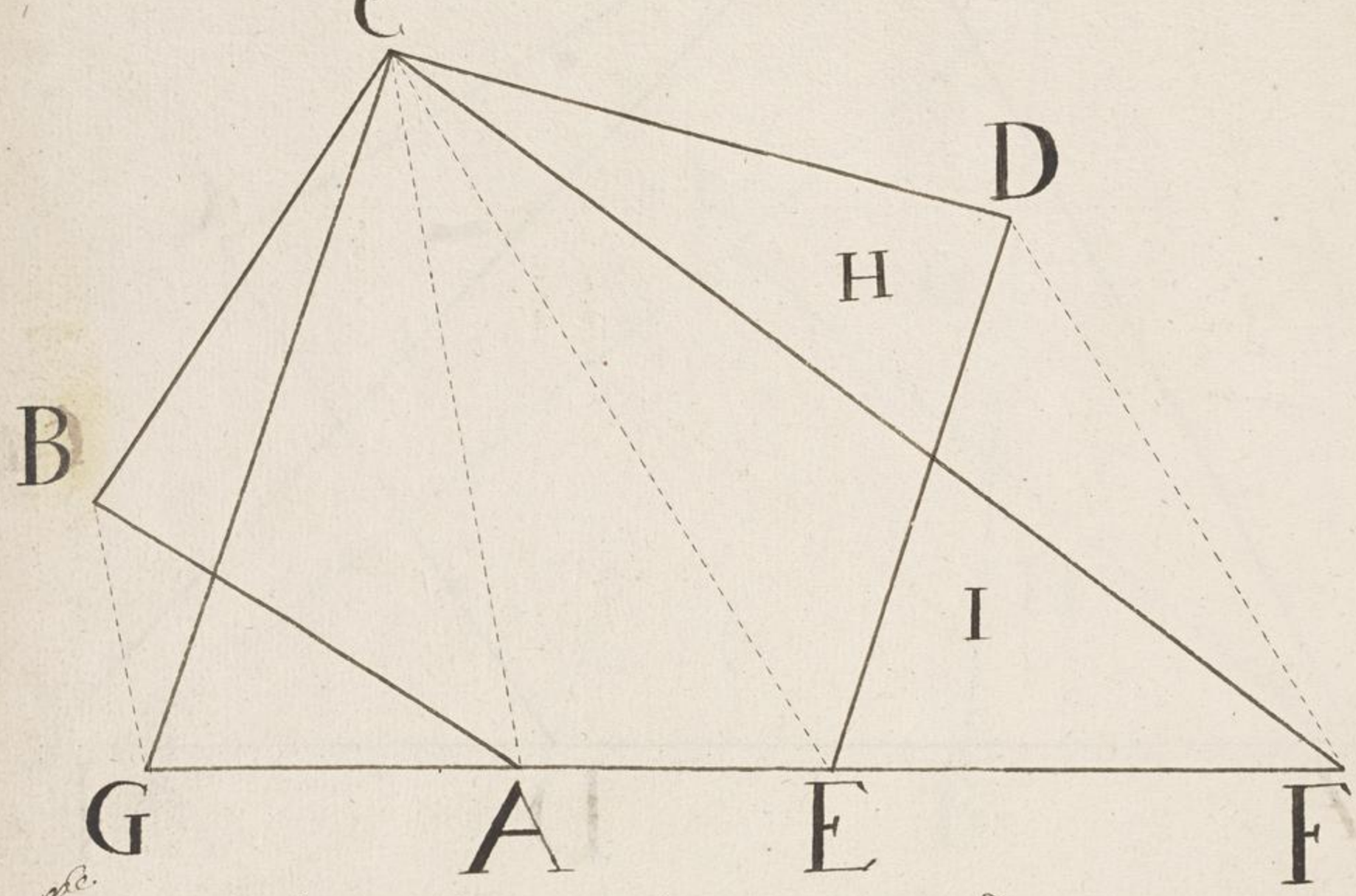


Increase the base at length to E that done the diagonall BD, then by C draw a parrallell thereunto, to cutt the base (increased) in E, Lastly draw BE, so shall you include the Triangle A B E equall to the Trapezia given required.

Prob. 50.

From an angle in a plott given to draw a line to the base, increased (if soe it require) that shall take in so much as it cutts of.

Let ABCDE, be a plott given, and it is required to draw a line from the angle C in such sort, that the triangle H, cutt of be equall to the triangle I, taken in.



&c.

First increase the base that way as the line from C is to be drawne, viz to H, then draw y^e^ obscure line CE that dont, from the point D, draw a parralell thereunto, to cutt the base (beinge increased) in H. Lastly draw CH, which performeth the demand.

Againe let it bee required from C to draw a line towards the left hand, as CG, in such sort, that soe much as is cutt of may be taken in; Increase the base EA to G, then draw CA, that done, by the point B, draw a parralell thereunto, as BG, to cutt EA (increased) in G. Lastly draw the line CG, which shall take in so much as it shall cutt of.

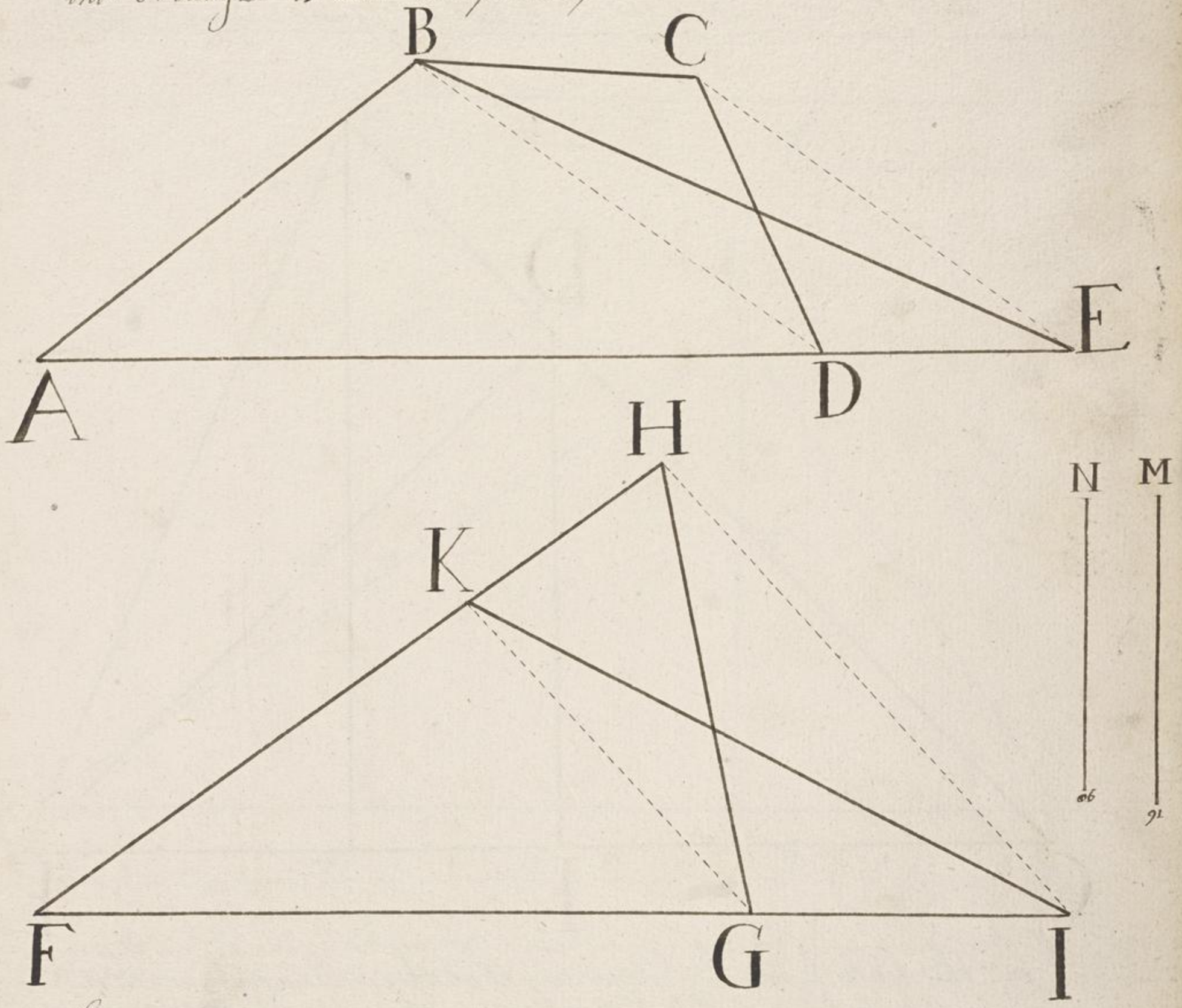
(Note; Herby may be gathered, how to reduce a plot into a Triangle, with lines drawne from an angle assigned: for Let the base first increased both wayes, then draw CH, as before tought, cutting of the Triangle H, and taking in the Triangle I. equall thereunto. so is there nothing lost) for the Trapezia ABCH. is equall to the plott ABCDE. againe by the same rule) let CE, be drawne taking in so much as it cutteth of, so shall ye triangle CEH, be equall to the Trapezia ABCH. or unto the plott ABCDE. required.

These 4. last Problemes haue their demonstration out of the 37. of the 1. of Euclid.

Prob. 51.

To giue two right lines in such proportion one to y^e other, as two figures giuen.

Let the Trapezia A B C D, and the Triangle F, G, H, be two figures giuen, and it is required to giue two right lines in proportion as the Triangle to the Trapezia.

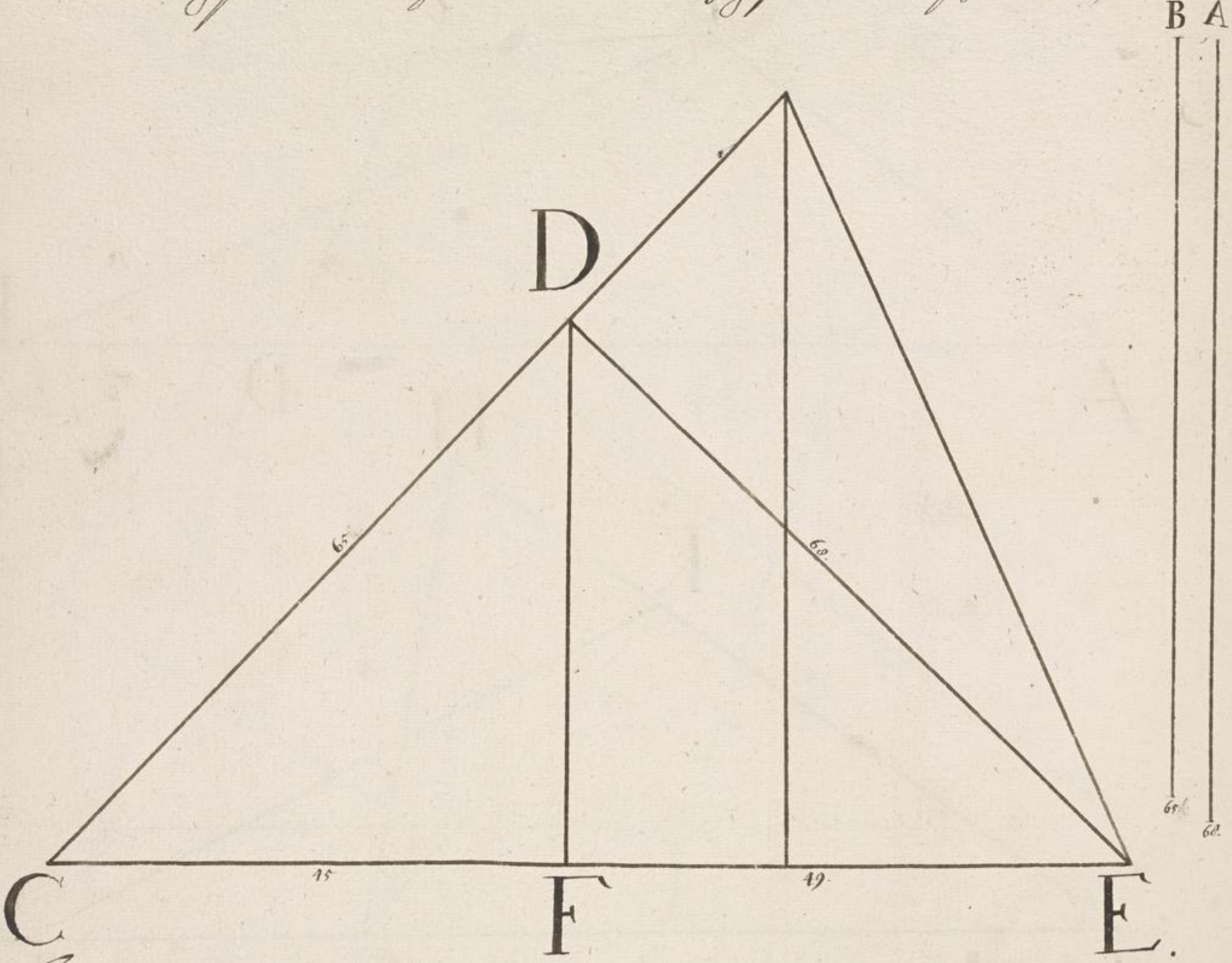


By the 49.th problem bringe the Trapezia into the Triangle A B E. Then Increase the base of the triangle F G, to I, till it be of the length of A E, (the base to the triangle A B E,) Then by the 50.th problm, bringe the triangle F G H, into the triangle F K I, from K to the base F I, which is the line M. Lastly Likewise the perpendicular or shortest distance (in the triangle A B E,) from B to the base A E, which is the line N so shall the line M haue the same proportion to the line N, or the triangle F G H, to the Trapezia A B C D, which was required.

Prob: 52./

To giue two right lins, hauing such proportion
one to the other as two Squaris giuen./

Let A and B be the sids of two Squaris giuen, and it is required to giue two right lins hauing the same proportion one to the other as the Squar made of the lin A hath to y^e Squar made of y^e lin B./



Joyn the lins A and B so together, that thy make a right angle as CDE, and draw the subtendent sid CE, then from the right angle D. let fall a perpendicular to CE, (as DF,) which deuid both CE, into 2 parts in F, which parts CF, and EF, ar two right lins in proportion one to the other, as ye Squar of A, to ye Squar of B, for as CF to EF, so the Squar of A to the Squar of B which was required./

And not only two right lins may this way be giuen, hauing proportion together as two Squars, but as two Circles, Triangles, or other figurs, whos angles ar alike, and sids proportionall, as if A and B, weare the diamiters of 2. Circles, then the lines CF, and EF haue the same proportion one to ye other as those Circles./

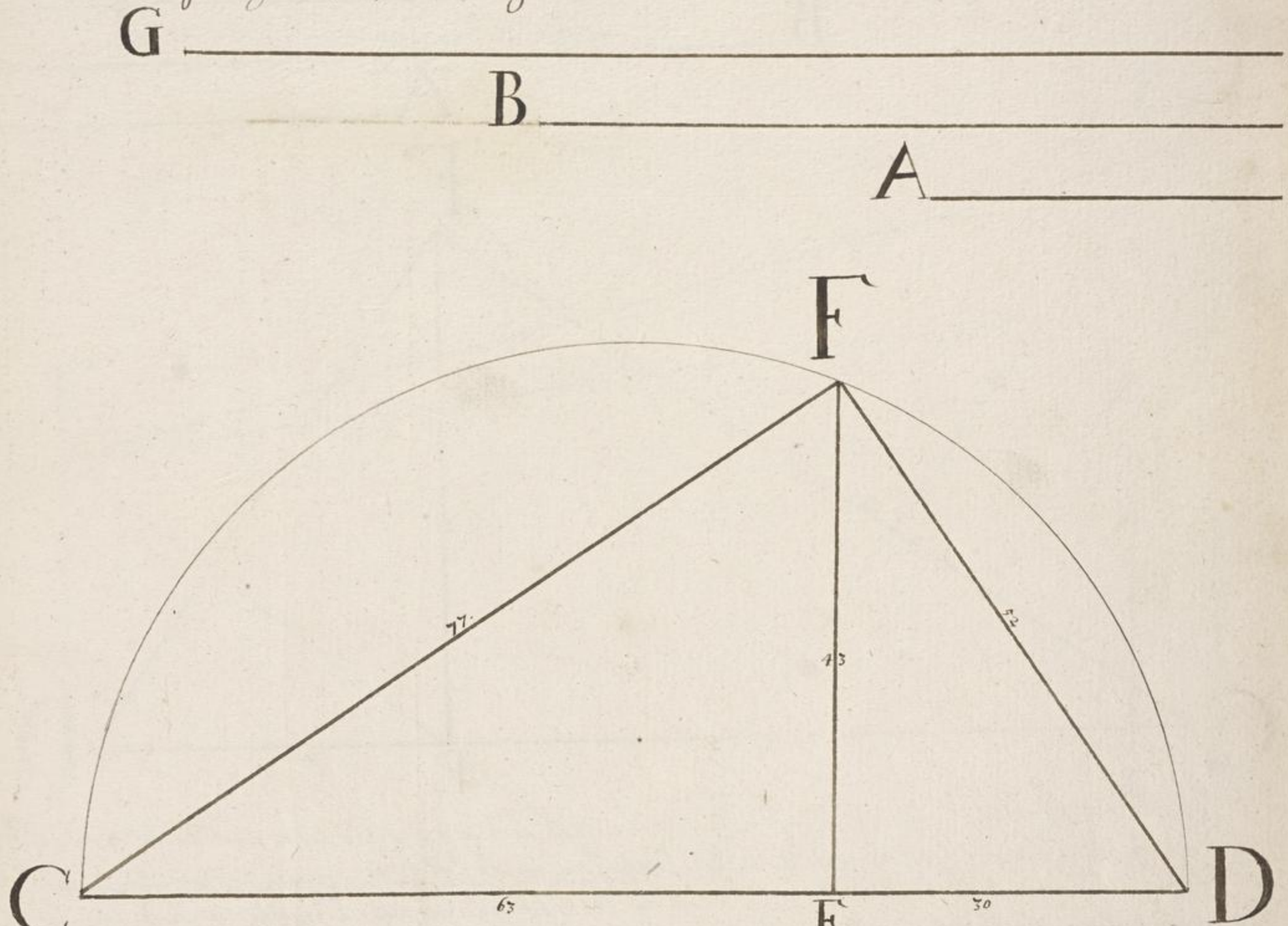
Againe, let A and B be two sids of two equiangled trianglos, then thayr contints ar as CF, to CE, and the like of two.

Pentagons, Hexagons, Heptagons, &c./

Prob 53.

To make any two like figures, having proportion one to the other as two lines given.

Let A and B be two lines given, and it is required, to make (two like triangles) having the same proportion together, as the line A to the line B.



Joyne the lines A and B so together that the make one line as CD, whereupon discribe the semicircle C ff D, then upon the point E where the lines ar ioyned together; erect a perpendicular to cutt the limbe in f, as E f; Lastly draw the lines D f, and C f, which shall be the sides of the Triangles required, for an equilaterall triangle made of the line D f, shall have the same proportion, to an egilaterall triangle made of the line C f, as the line A to the line B which was required.

Againe, let A and G be two lines given, and it is required to give the sides of two equillaterall triangles, which shall have the same proportion together as the line A to the line G,

First, lay downe the Line G, from C to D, whereupon discribe the semicircle C f D, then take the line A, and set it from D to E, and upon the point E, erect a perpendicular, to cutt the limbe in f. Lastly draw D f, for shall D E, and D C be the sides of two equilaterall triangles, having the same proportion one to ye other, as the Line A to the line G; for as A to G so the Equilaterall triangle made of the line D f, to an Equilaterall triangle made of the line D C;

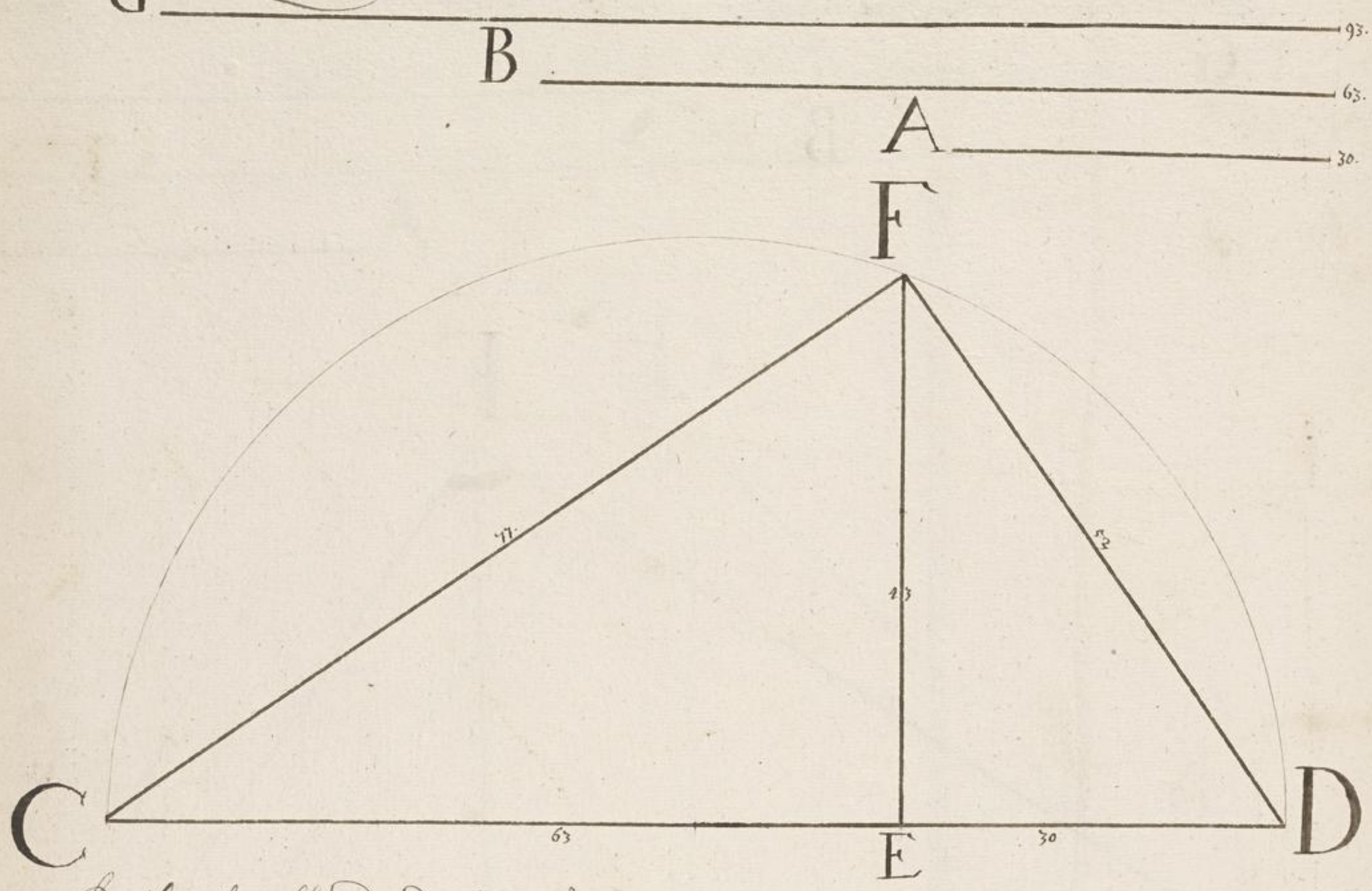
And in the same manar may you doe for squares, Circles, or other like figures, as by the 95th problem doth more plainly appeare, where is tought how to increase or decrease a plott according to any proportion given.

But if your triangles to be made, be not Equilaterall, then, must you doe the like for every of the sides apart, or elce, by the rule of proportion (having thus found one of their like sides) finde the rest &c.

Prob 54.

To devide a line in power according to any proportion given.

Let CD be a line given to be devided in power as A to B.



By the 22th. problem devide CD in E as A to B, viz; that as A to B for the lesser part DE, to the gratter part EC. That done discribe upon the line CD, the semicircle CFD, then upon the point E erect a perpendicular to cut the limbe in F. Lastly draw the lines DF, and CF, which together in power shall be equall to the power of the given line CD, and yet in power one to another as A to B, which was required.

Prob 55.

To inlarge a line in power according to any proportion assigned.

Let CE be a line given to be inlarged in power as B to G.

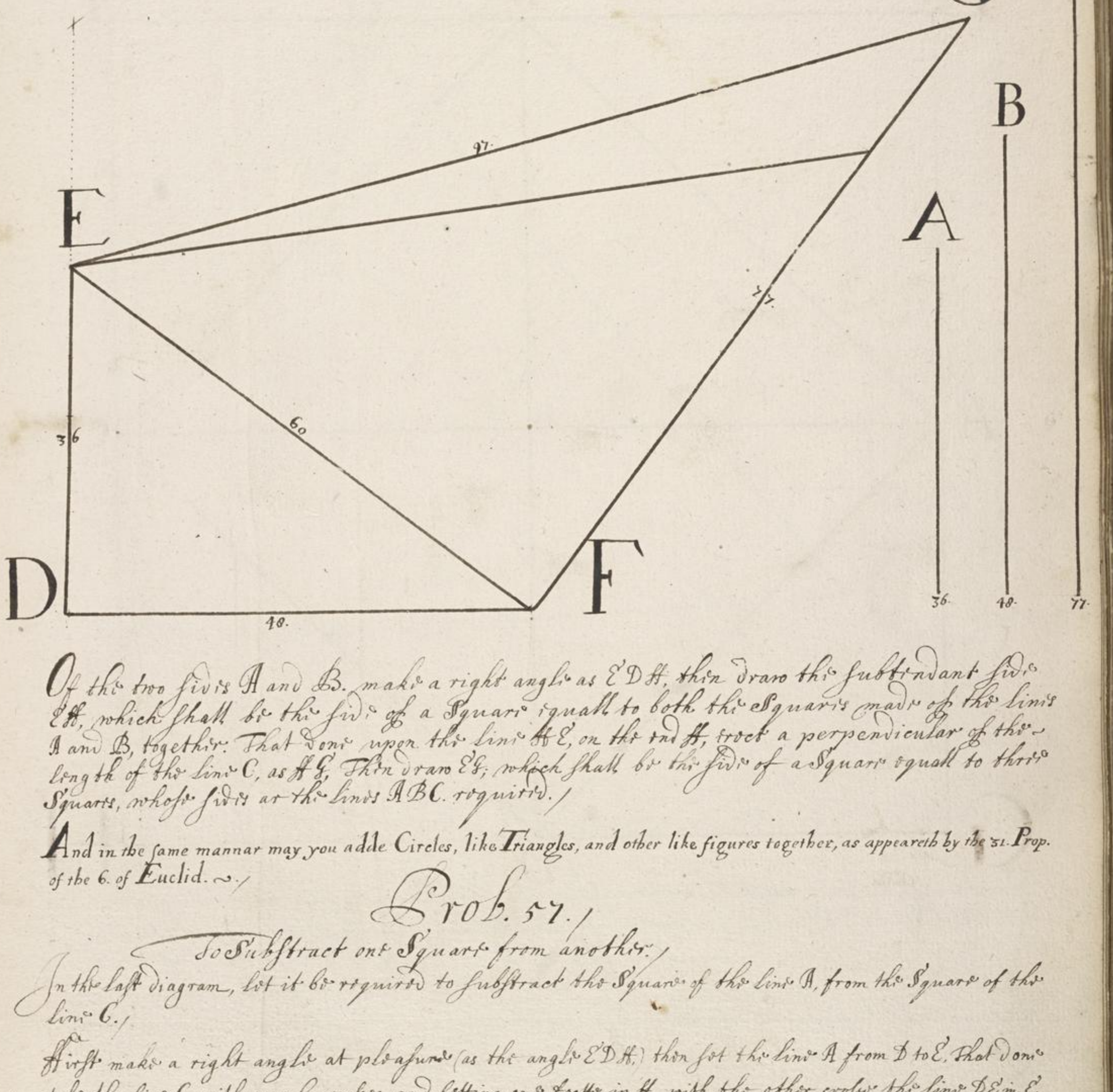
By the 21th. Problem, say, if B give G. what CE; answer CD. whereupon describe y. semicircle CFD, that done upon the point E. erect a perpendicular; to cut the lymbe in F. Lastly, draw CF, which shall be in power to CE. as G to B, which was required.

The demonstration hereof may be gathered from the places of Euclid set downe by the last Probleme.

Prob. 56.

To adde two, three, or more Squares together in one.

Let A B, and C. be the sides of three Squares given, and it is required to adde them altogether in one, that is to finde the side of one Square which shall be equall to them all.



Of the two sides A and B. make a right angle as E D H, then draw the subtendant side E H, which shall be the side of a Square equall to both the Squares made of the lines A and B, together. That done upon the line H E, on the end H, erect a perpendicular of the length of the line C, as H G, Then draw E G; which shall be the side of a Square equall to three Squares, whose sides ar the lines A B C. required.

And in the same mannar may you adde Circles, like Triangles, and other like figures together, as appeareth by the 31. Prop. of the 6. of Euclid.

Prob. 57.

To Substract one Square from another.

In the last diagram, let it be required to substract the Square of the line A, from the Square of the line C.

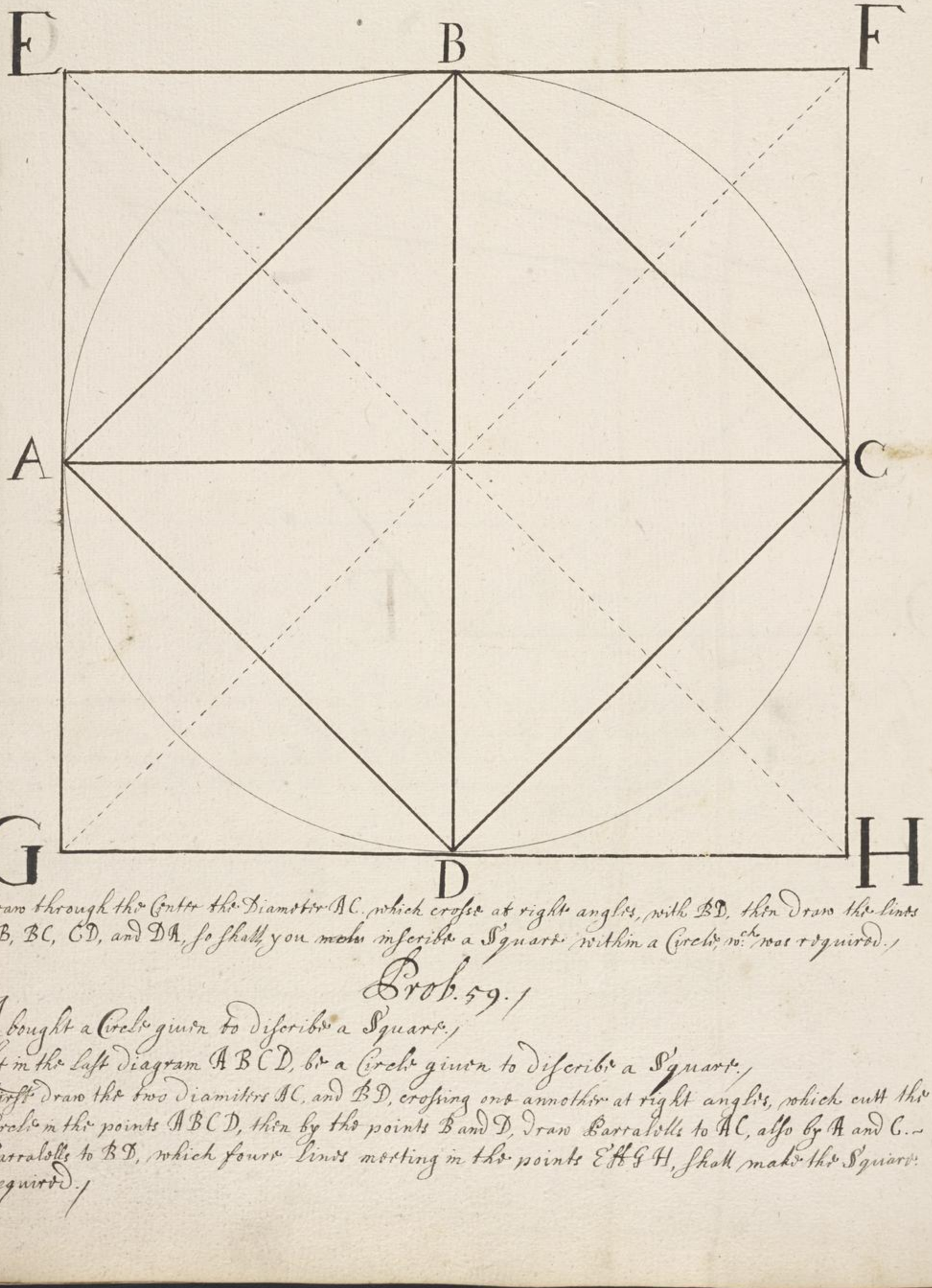
First make a right angle at pleasure (as the angle E D H,) then set the line A from D to E, that done take the line C with your Compasses, and setting one foote in H, with the other crosse the line D E in E, so shall D E, be the side of a Square remaininge, when the Square of A, is taken from the Square of C. which was required.

quere. Euclid.

Prob. 58.

Within a Circle given to inscribe a Square.

Let A B C D, be a Circle given wherein a Square is to be inscribed &c.



Draw through the Center the Diameter AC. which crosse at right angles, with BD, then draw the lines AB, BC, CD, and DA, so shall you have inscribe a Square within a Circle, wch was required.

Prob. 59.

A bought a Circle given to discribe a Square.

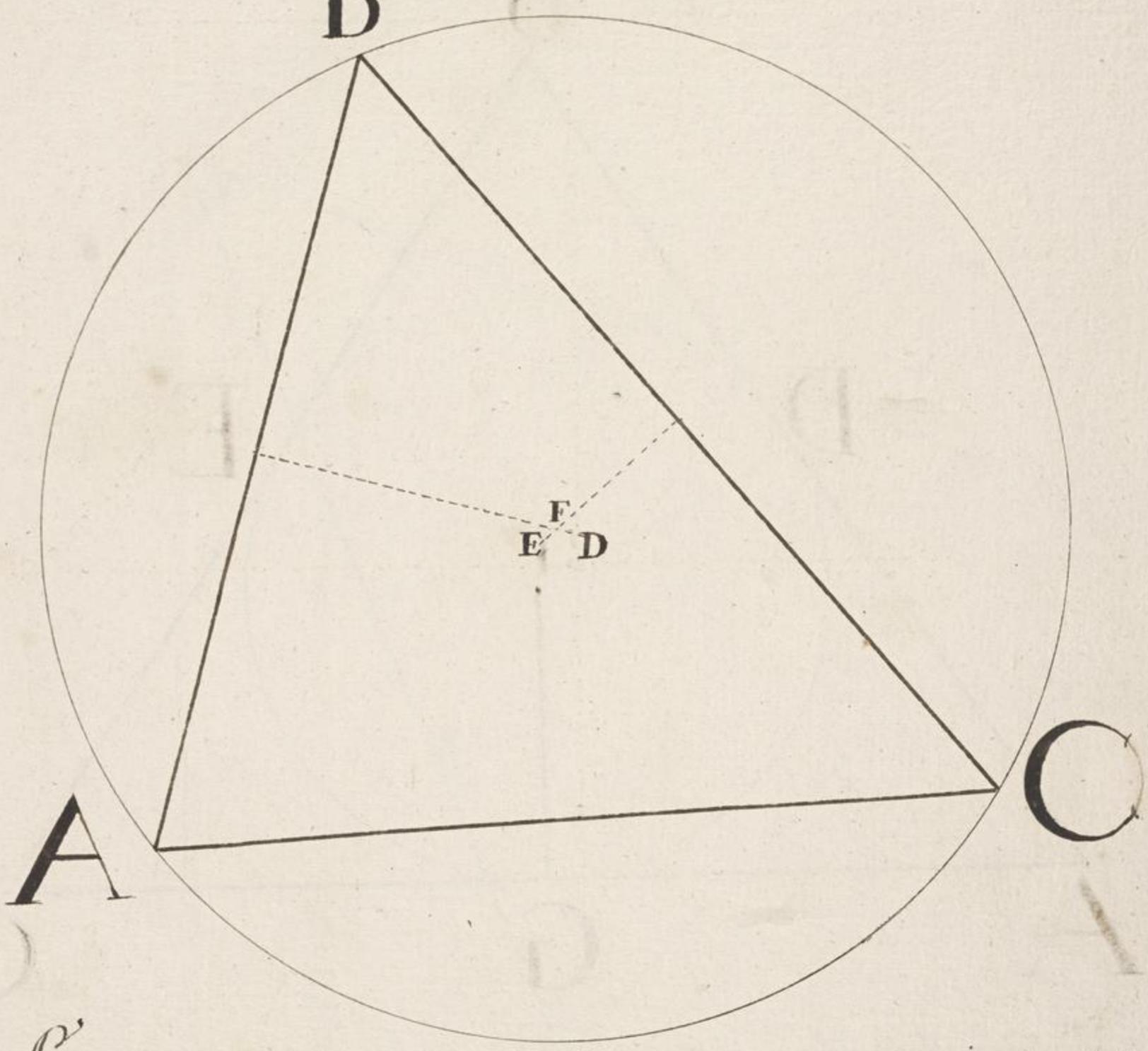
Let in the last diagram A B C D, be a Circle given to discribe a Square.

First draw the two diamiters AC, and BD, crosing one annother at right angles, which cutt the Circle in the points A B C D, then by the points B and D, draw Parralells to AC, also by A and C. Parralells to BD, which foure lines meeting in the points E F G H, shall make the Square required.

Prob. 60.

A bought a Triangle, to Describe a Circle.

Let ABC be a Triangle given, about the which it is required to make a Circle.



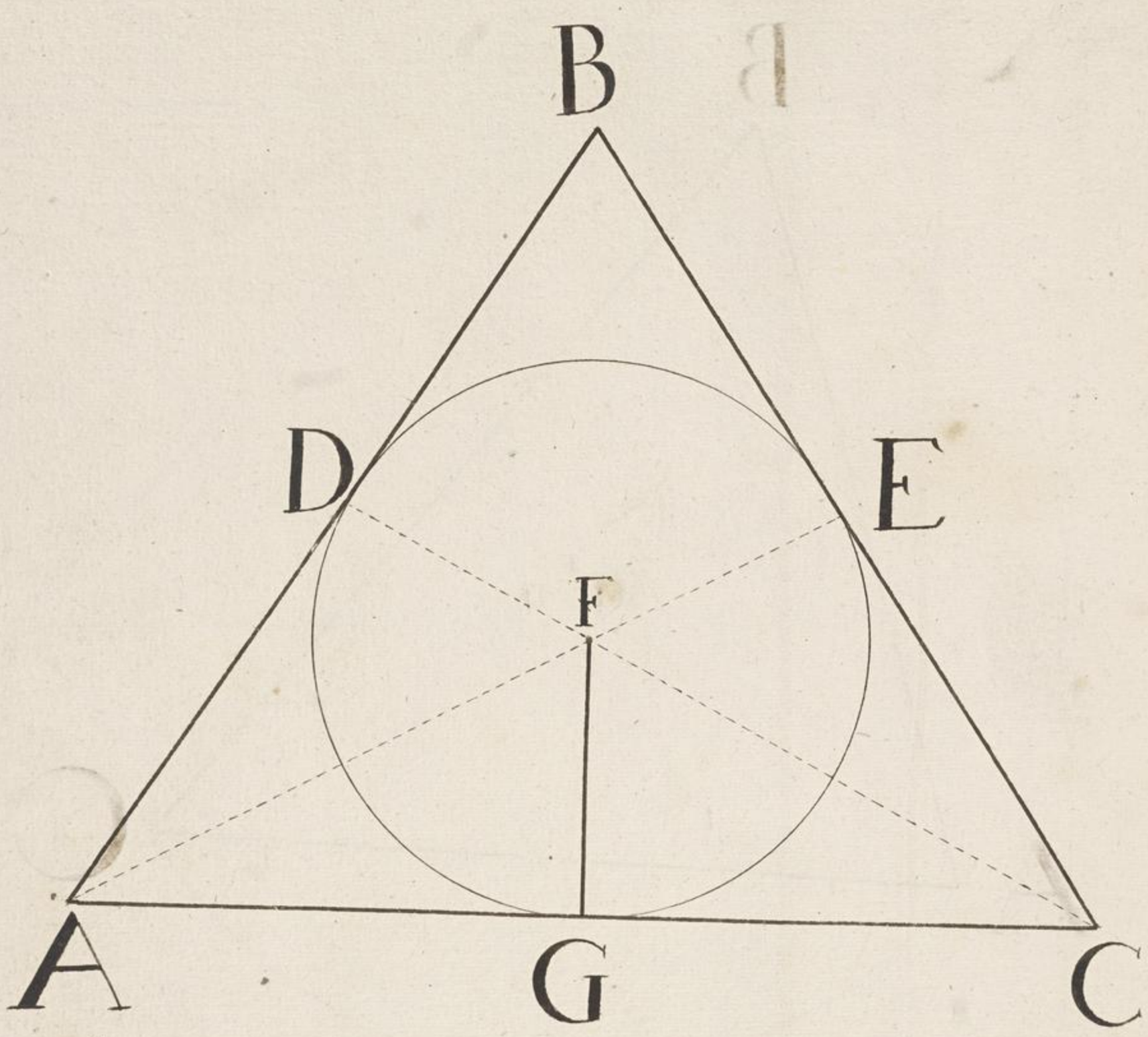
Suppose the three corners to be three points given, then by the 10.th Prob: it may be dun./

Or (which is all one) devide any two sides of the triangle into two equall parts at right angles by the first Problem, as the side AB, with the line D, and BC with the line E, which two Lines meete in the point K, which shall be the Center, then fix one foott in K, and extend the other to any of the angles ABC, and make the Circle ABC, which shall include the Triangle ABC required./

Prob 61.

Within a Triangle given, to inscribe a Circle.

Let ABC, be a Triangle given, wherein a Circle is to be inscribed.

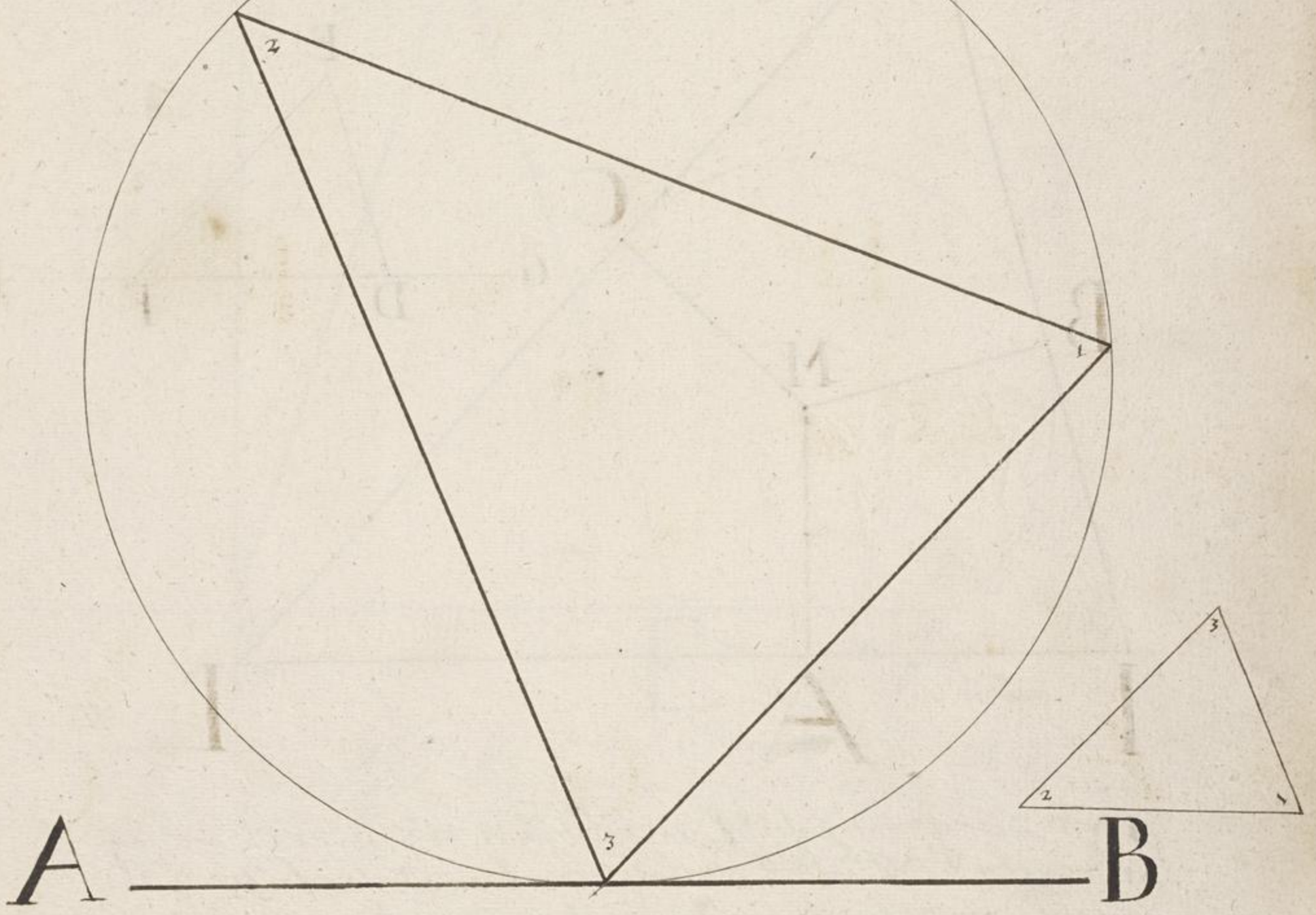


By the 9th Problem deuide any two of the angles into two equall parts, as the angle ACB, with the line CD, and the angle BAC, with the line AE, which two lines meete in F, so is F the Center from whence let fall a perpendicular to any of the sides, (as FG,) upon the side AC with which distance make the Circle DEG, upon the Center F, which shall stand with in the given Triangle ABC — required.

Prob. 62.

To inscribe within a Circle, a Triangle, whose sides shall be in proportion one to y^e other as the sides of a Triangle given.

Let 1.2.3. be a Circle given, wherein it is required to inscribe a Triangle whose sides shall have proportion together as the sides of the Little Triangle 1.2.3. &c.

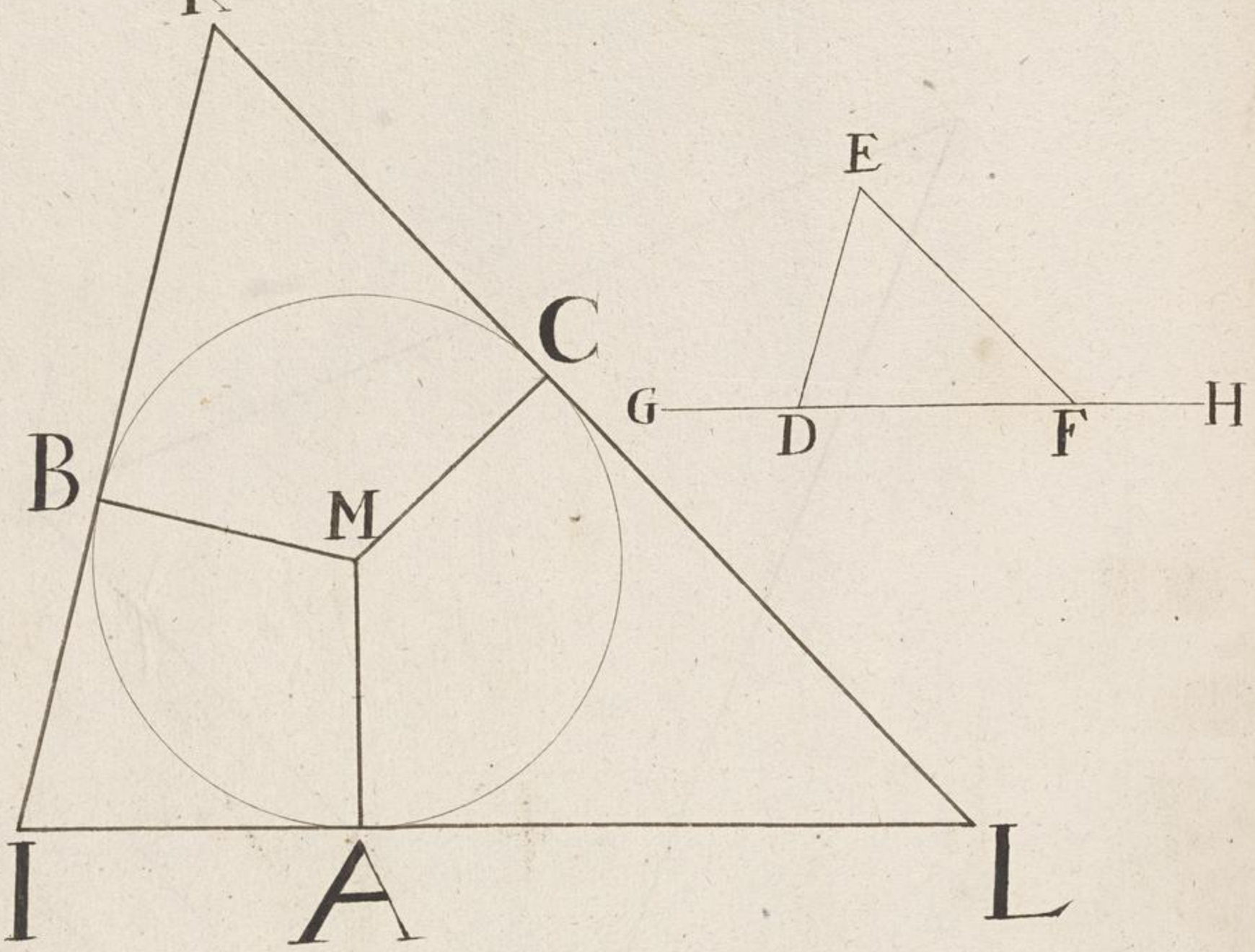


Draw by the 19.th Problem a touch line, as A.3.B, which toucheth the Circle in y^e point 3. Then make the angle A.3.2. equall to the angle 1. of the Little Triangle, and the angle 1.3.B. equall to ye angle 2. of the same Little triangle by the ~~same~~ 6.th Problem, Lastly draw in the Circle the line 2.1. So shall you ~~make~~ inscribe the Triangle 1.2.3. within the Circle, whose sides shall be in proportion one to ye other, as the sides of the Lesser triangle 1.2.3. which was required.

Prob. 63.

About a Circle given, to discribe a Triangle whose sides shall have proportion the to ye other, as the sides of a Triangle given.

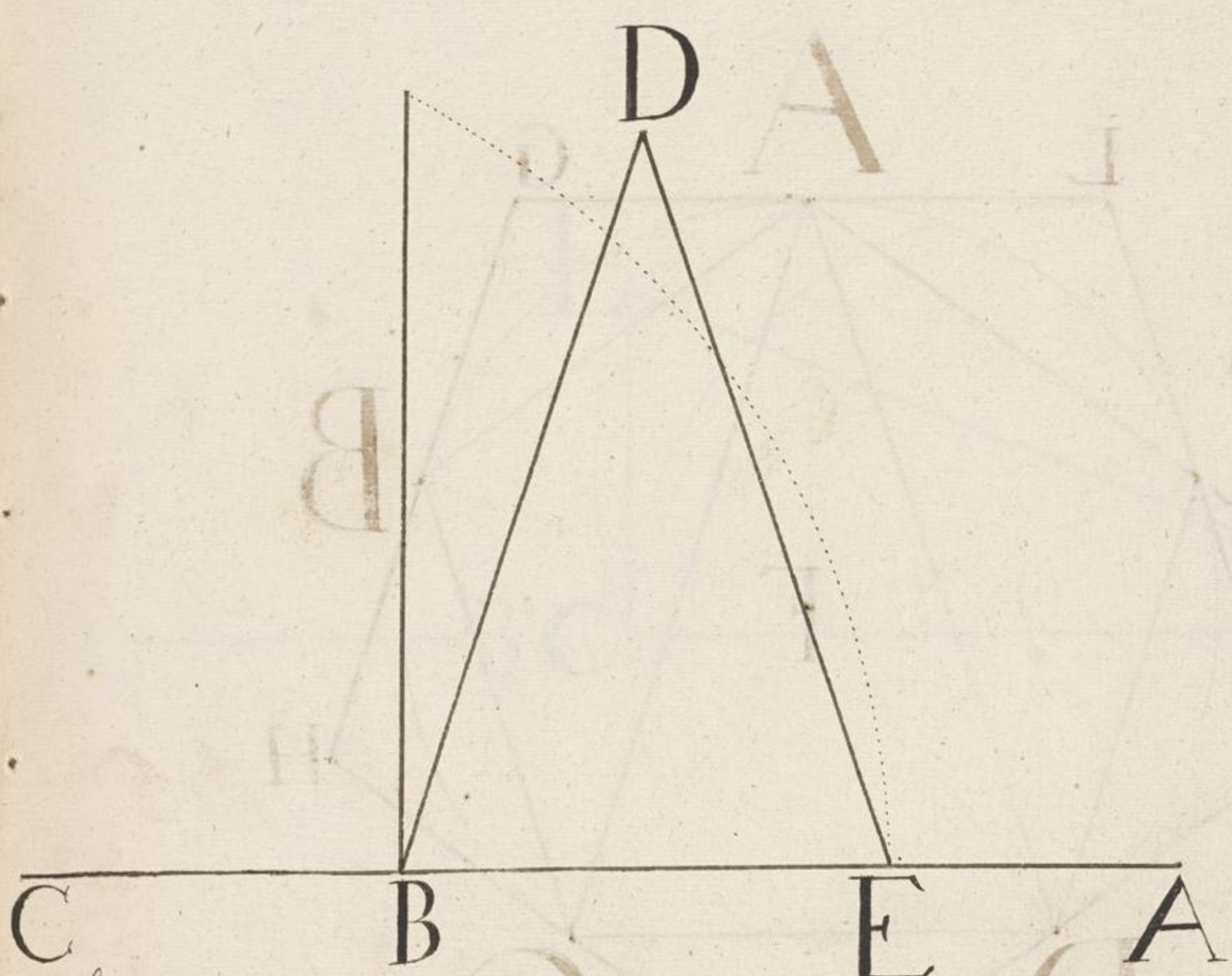
Let A B C. be a Circle given about the which it is required to discribe a Triangle, whose sides shall be in proportion one to another as the sides of the Triangle D E H.



First increase the base D H, on both sides, to G and to H, making the angles E D G, and E H H, that done, from M the Center of the Circle, draw a line to any part of ye Circomference (as M A,) then make ye angle A M B, equall to ye angle E D G, also, ye angle A M C, equall to ye angle, E H H, That done, upon the points A B C, erect perpendiculars, which will meete in the points K L I, so shall the sides of ye Triangle K L I, have proportion together, as the sides of the given Triangle D E H, which was required.

Prob. 64./

To make Such an Isoceles Triangle that shall have each angle at the base, double to that at the toppe./



By the 26th proposition deuide any line, by extreame and meane proportion, as the line AB, in E, so is BE, the greater segment, then make an Isoceles Triangle, whose base Let be the sayd greater segment, and the other sides, each the whole line AB, as BDE, which shall be the triangle required./

Prob. 65./

Within a Circle giuen to inscribe a pentagon./

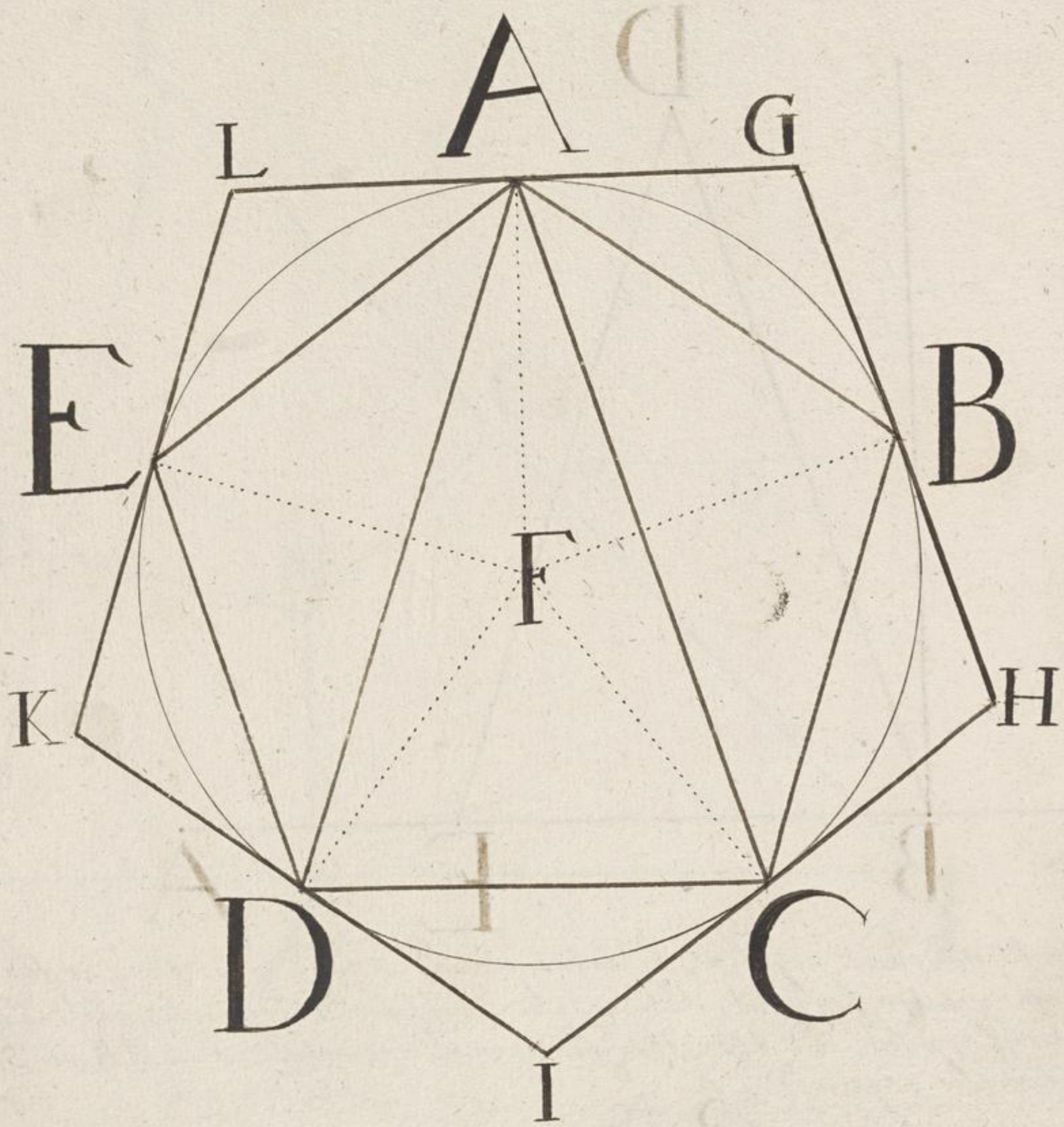
Let in the diagram folowing be ABCDE, be a Circle giuen whertin a pentagon is to be inscribed./

By the last problem make Such an Isoceles triangle as is afforsayd tought, having each angle at ye base, double to that of the toppe D, Then by the 26th problem, inscribe within the circle giuen a triangle, like that, as the triangle ACD, whose base CD, fot fiue times in the limbe, so shall you include the pentagon ABCDE, within the Circle which was required./

Prob. 66.

To Circomscribe a pentagon, about a Circle giuen.

Let A B C D E, be a Circle giuen, about y^e^ which a pentagon, is to be made.



First, make^e^ inscribe the pentagon A B C D E, as before in the formar problem tought, Then from y^e^ Centar F, draw lines to euery of the points A, B, C, D, E, That done, upon euery of those lines, on the points A B C D E erect perpendiculars, which shall mete in the points G H I K L; which shall include a pentagon about the Circle giuen, which was required.

Prob. 67.

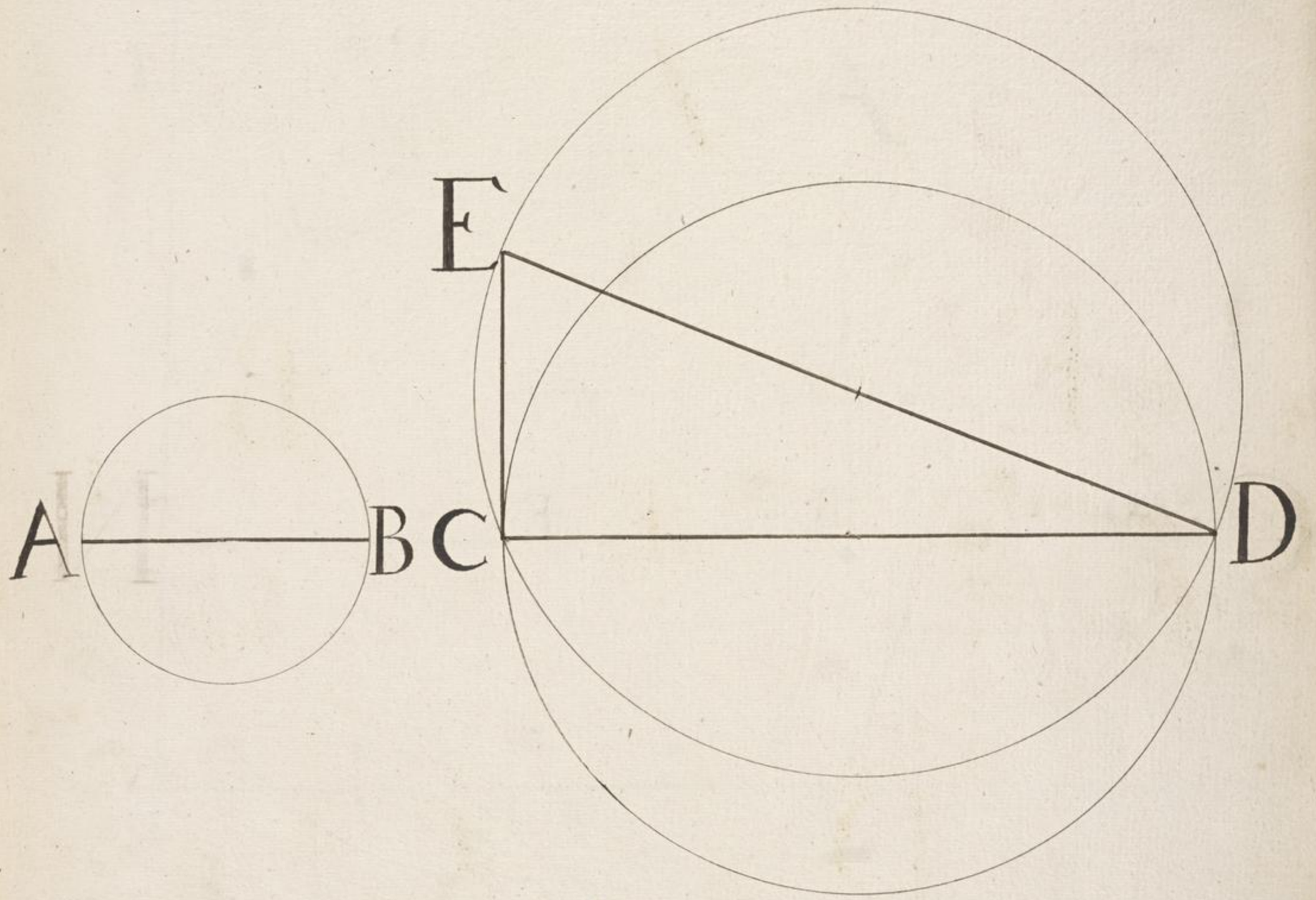
Within ye formar pentagon giuen, to inscribe a Circle.

Let in ye last Diagram G H I K L, be a pentagon, giuen, within ye which a circle is to be inclosed inscribed.
Deuide any two of ye sides in the midst, at right angles, as the side I K, with the Line D F, and the side G L, with the line A F, which mete in F, so is F ye Center; Then setting one foot in F, Extend the other to one of the points A, or D, and make the Circle A B C D E, which shall stand within the pentagon G H I K L required.

Prob. 60.

Divers Circles being given, to adde them together into one Circle.

Let A B, and C D, be two Circles given, to be put both into one Circle.

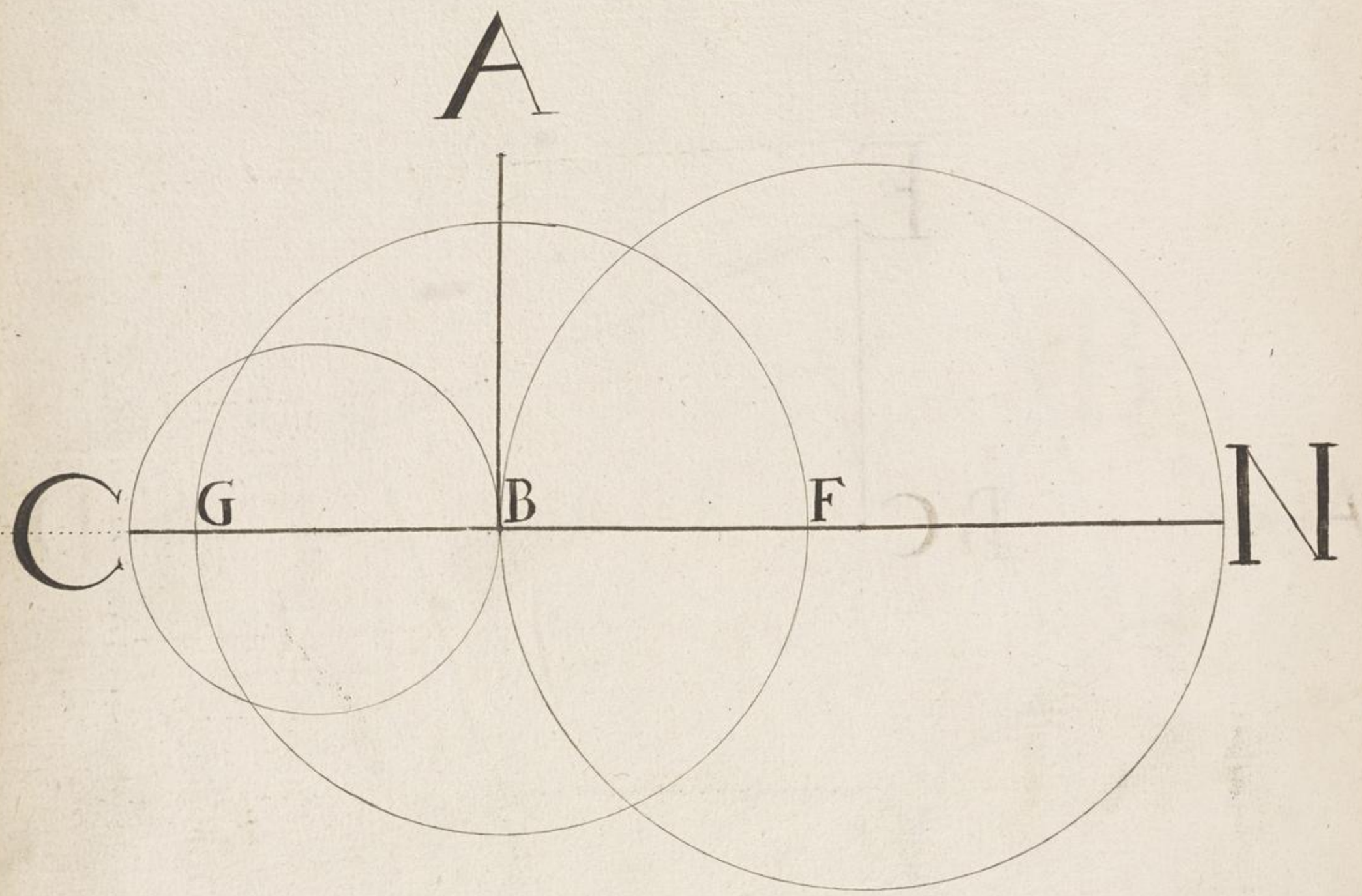


Take the Diameter A B, and by the 3. problem raise it perpendicularly on the end of the other diameter C D, as E C, then draw the subtending line E D, on which line as a diameter discribe the Circle E D C &c. which shall be equall to the two given Circles as was required; And in like sort by helpe of the 70.th Prob: may be added as many Circles as shall be required; for Circles may be added by there diameters as Squares by there sides.

Prob. 69.

Two Circles being given, to subtract ye one out of y^e other and to produce the remander in a third Circle.

Let the two Circles given be AB, and BC, and let it be required to subtract the Circle BC, out of the Circle AB; and to produce the remander in a third Circle.

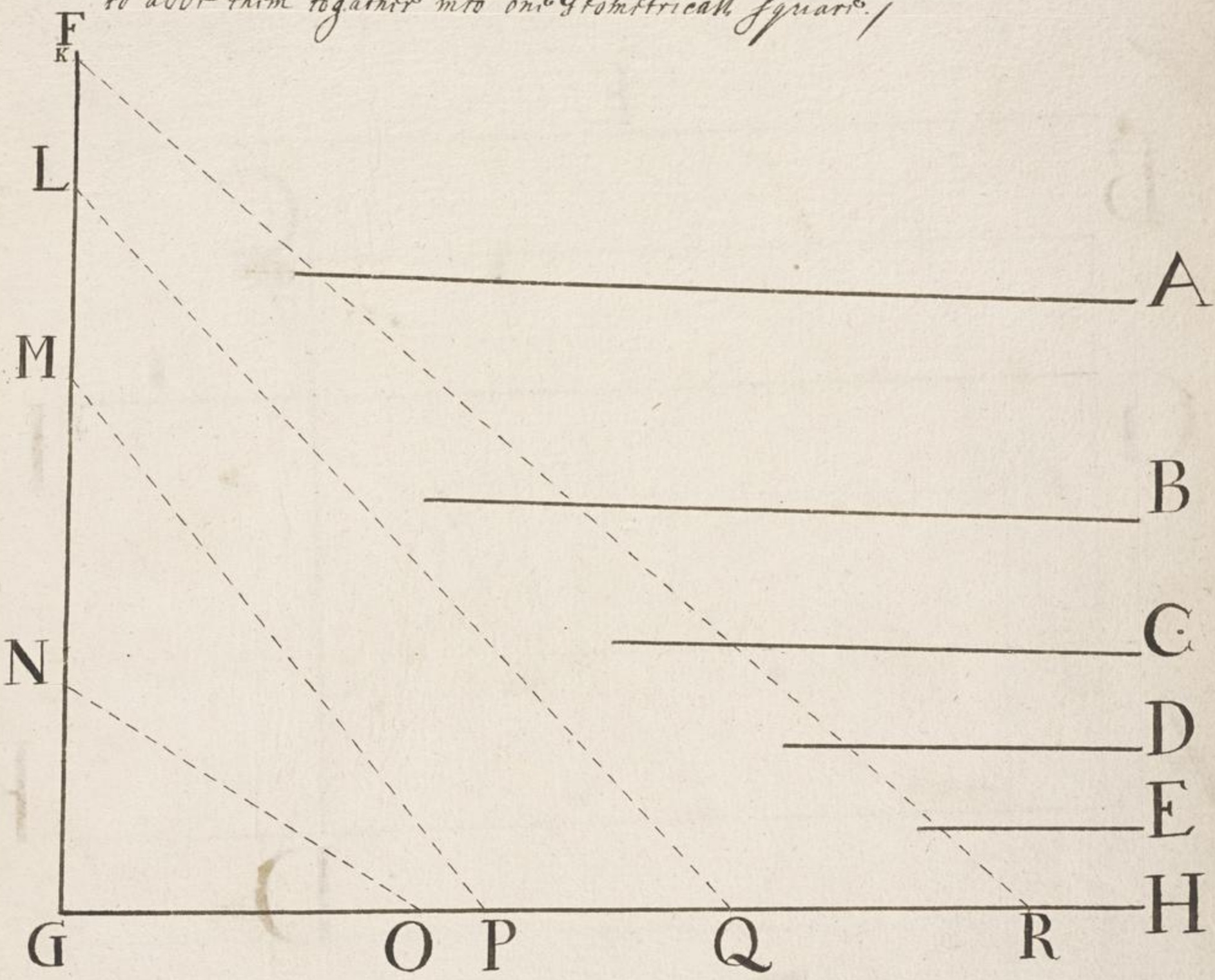


Take the diameter BC, and by the third Prob; raise it perpendicularly on the Point B, as BA, then at the distance of the Diameter AB, with one foot of your Compasses in A, strike an arch through the end of the Diameter BC, b and C, then at half that distance of B and the point near C, discribe the Circle GH, on the point B; so have you subtracted the Circle CB, out of the Circle BA, and produced the remainder in a third Circle, GH, as was required.

Prob. 70.

To adde diuers squares togather into one Geometricall square.

Let ABCDE, be the sides of fiue squares giuen, and let it be required to adde them togather into one Geometricall square.

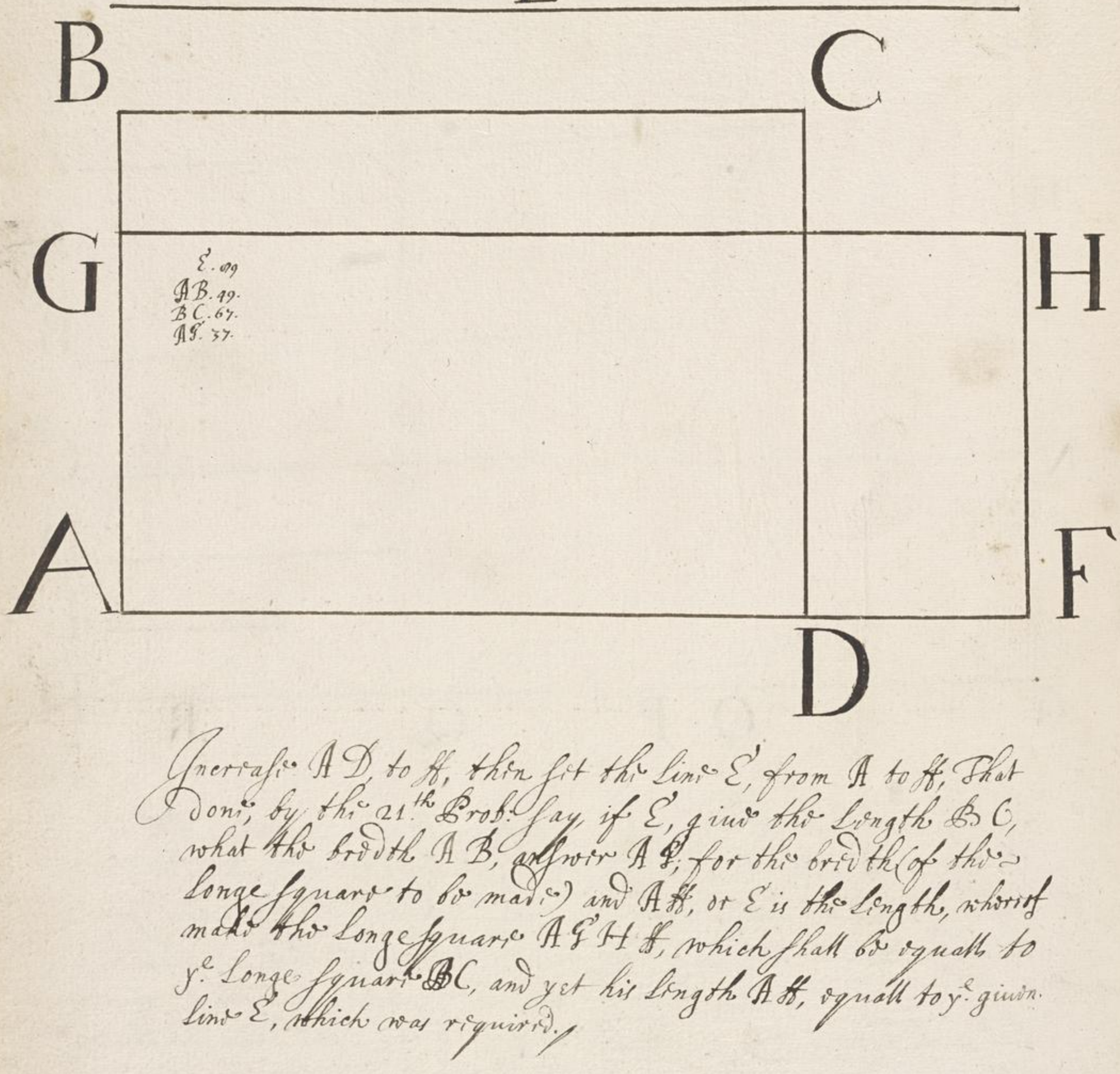


First by the third Prob: make a right angle at pleasure; as HGH, then (begining with the least side, first,) take the line E, and place it from G, to M. and the line D, from G to O. and draw the line MO, whose square shall be equall to both ye squares of E and D, then take MO, and place it from G, to P, and the side C, from G to M, and draw the line ME, which line place from G to Q; and the side B, from G to L, and draw the line LQ, which line place from G to R. and the line A from G to K; and lastly draw the line KR and thereon by the 14th Prob: discribe a square, which shall be equall to all the fiue squares, whose sides where giuen, as was required.

Prob. 71./

To reduce a Longe Square into another Longe Square, whose length or Breadth is limmited./

Let A B C D. be a Longe Square given to be reduced into another Longe Square, whose Length shall be equall to y^e^ line E./

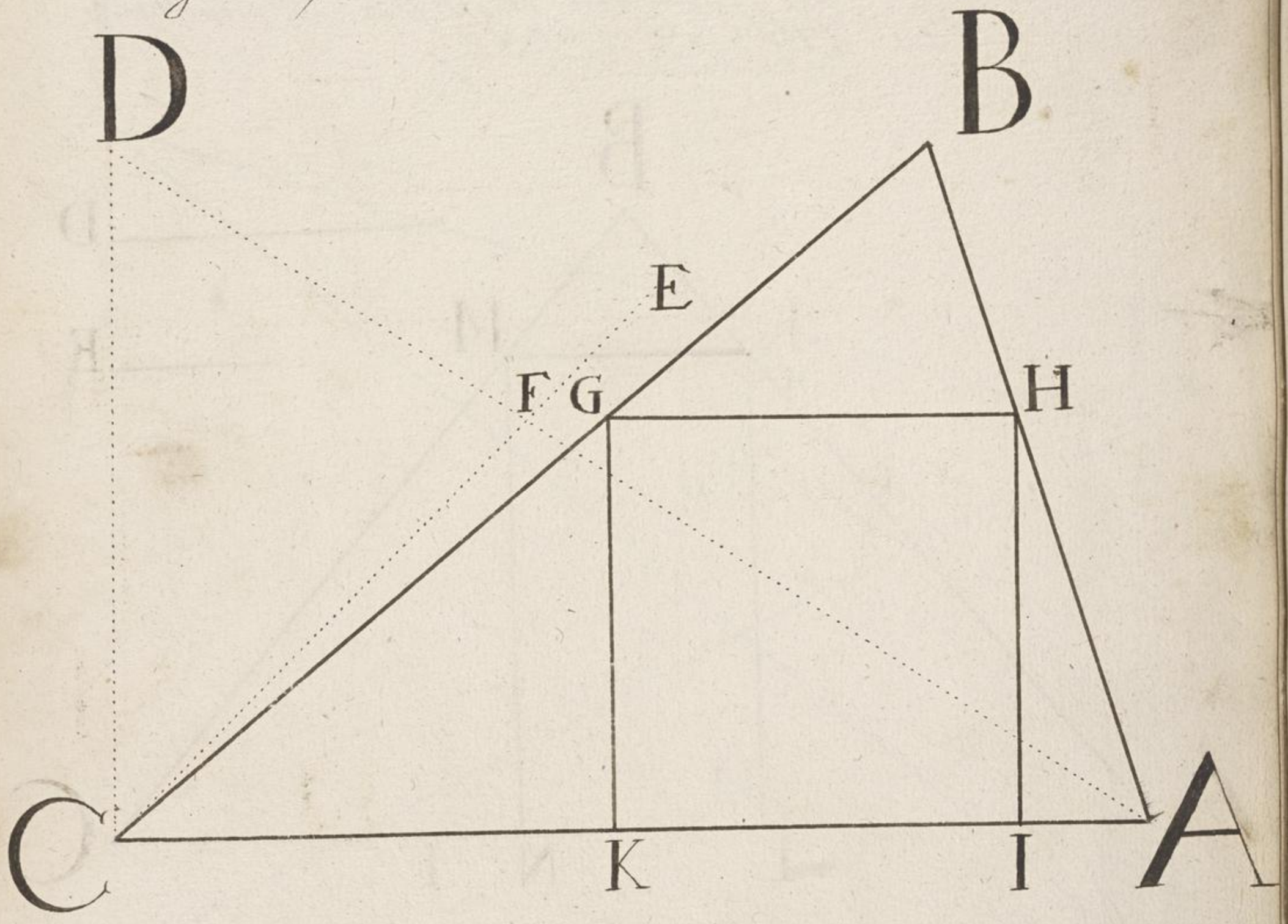


Increase A D, to ff, then fit the line E, from A to ff, That done, by the 21.th Prob. say, if E, give the Length B C, what the Breadth A B, answer A F; for the Breadth (of the Longe Square to be made) and A ff, or E is the Length, whereof made the Longe Square A F H ff, which shall be equall to y^e^ Longe Square B C, and yet his Length A ff, equall to y^e^ given line E, which was required./

Prob. 72.

Within a Triangle to inscribe a Square.

Let ABC, be a Triangle given, wherein a Square is to be inscribed.

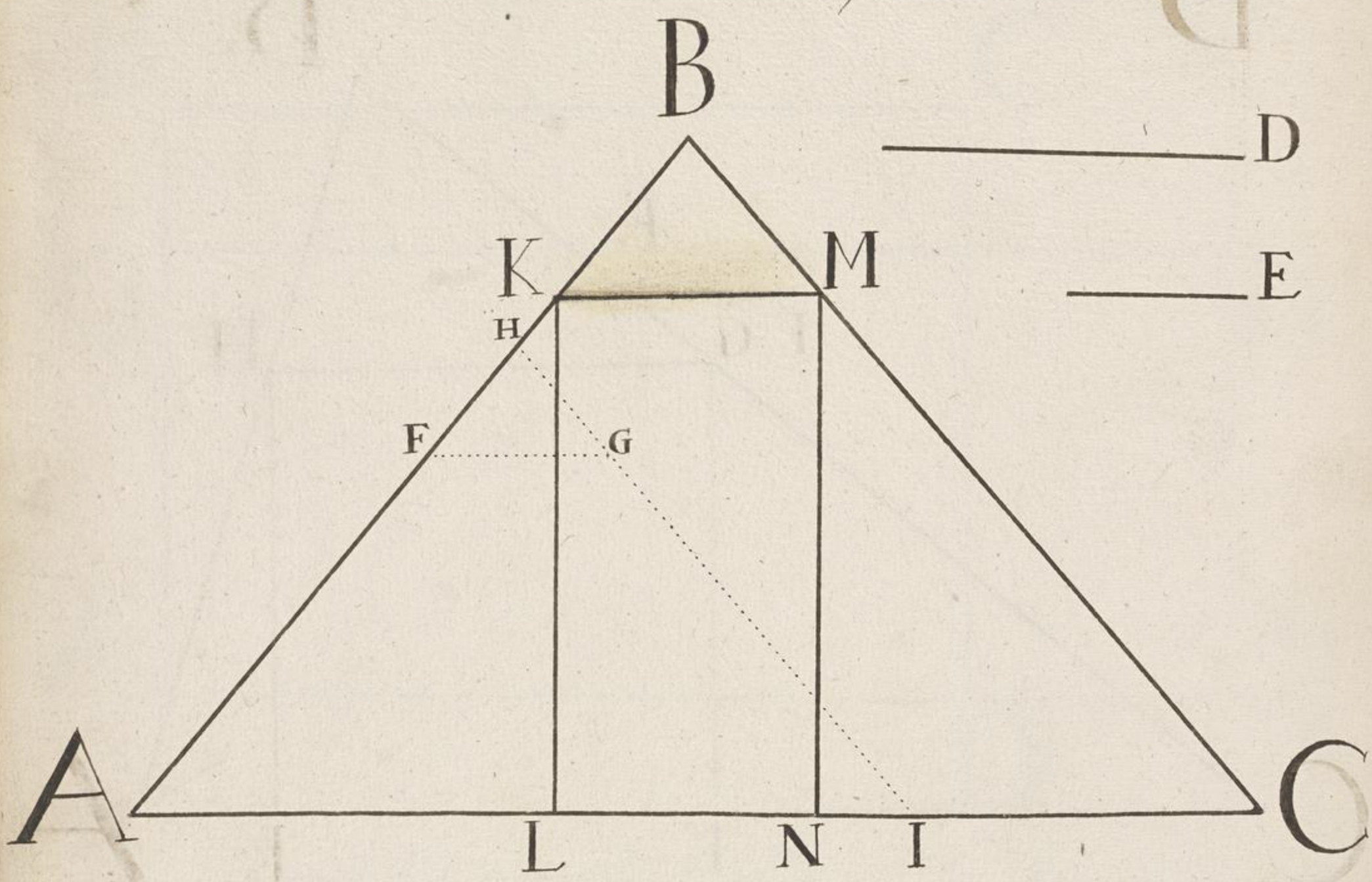


Upon the end C, erect a perpendicular of the length of the perpendicular, from B, upon the base AC, (as CD,) then draw ye subtendant side AD; That done, Divide the right angle ACD, into two equall parts (by the 9.th Prob:) with the line CE, which cutteth AD, in E. Lastly by the point E, draw a parralell to ye base AC, as GH, whereof make ye Square GHIK, which shall stand within the triangle ABC, required.

Prob. 73.

Within a Triangle, to inscribe a parallelogram, whose sides shall have proportion together as two lines given.

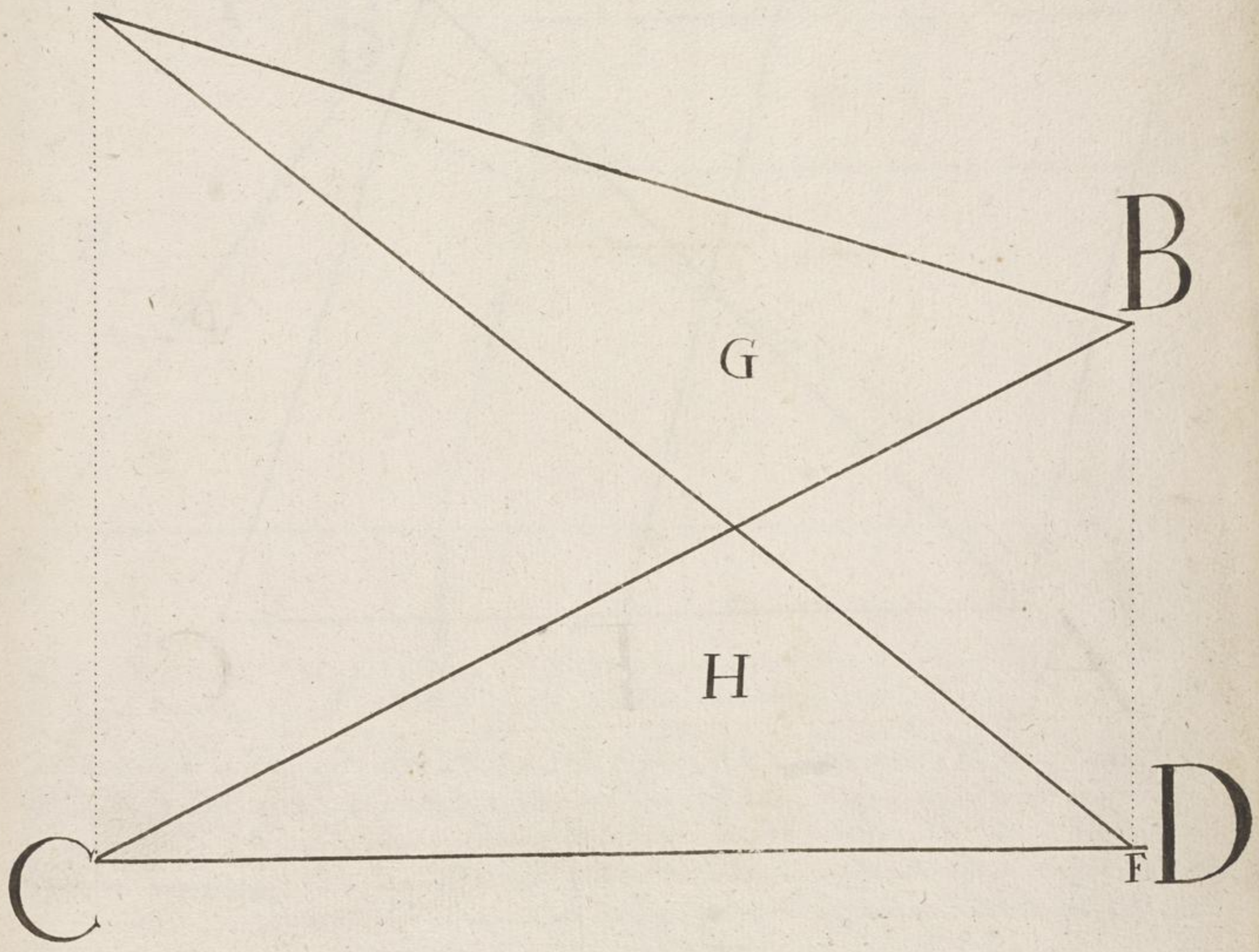
Let ABC, be a Triangle given, and let it be required to inscribe within it a longe square, whose length shall have proportion to his breadth as the line D, to y.e line E.



At the distance of the length D, draw a parralell to the base AC, as FG, to cutt the side AB, in F, then set the breadth E, on the parallel from F to G, and by G, draw a parralell to the side BC, as HI, to cutt AB, in H, Then say by the 21.th Prob: if AH, give AF, what AB; answer AK, from which point K, let fall a perpendicular to the base AC, as KL, also from K, draw a parralell to AC, as KM, to cutt the side BC, in M, Lastly from M let fall a perpendicular to AC, as MN, so shall you include the Longe square LKMN, within the Triangle ABC, whose length shall be to his breadth as the given lines D, to E, which was required.

Prob. 74.

There is an angle BCD, and from a point as H, in the line CD, is drawn a line by chance of any length as HE, cutting off from the angle BCD, the Triangle H, now it is required from B, to draw a line to, some part of HE, as ye line BE; to include a triangle as G, equall to the Triangle H cutt off;

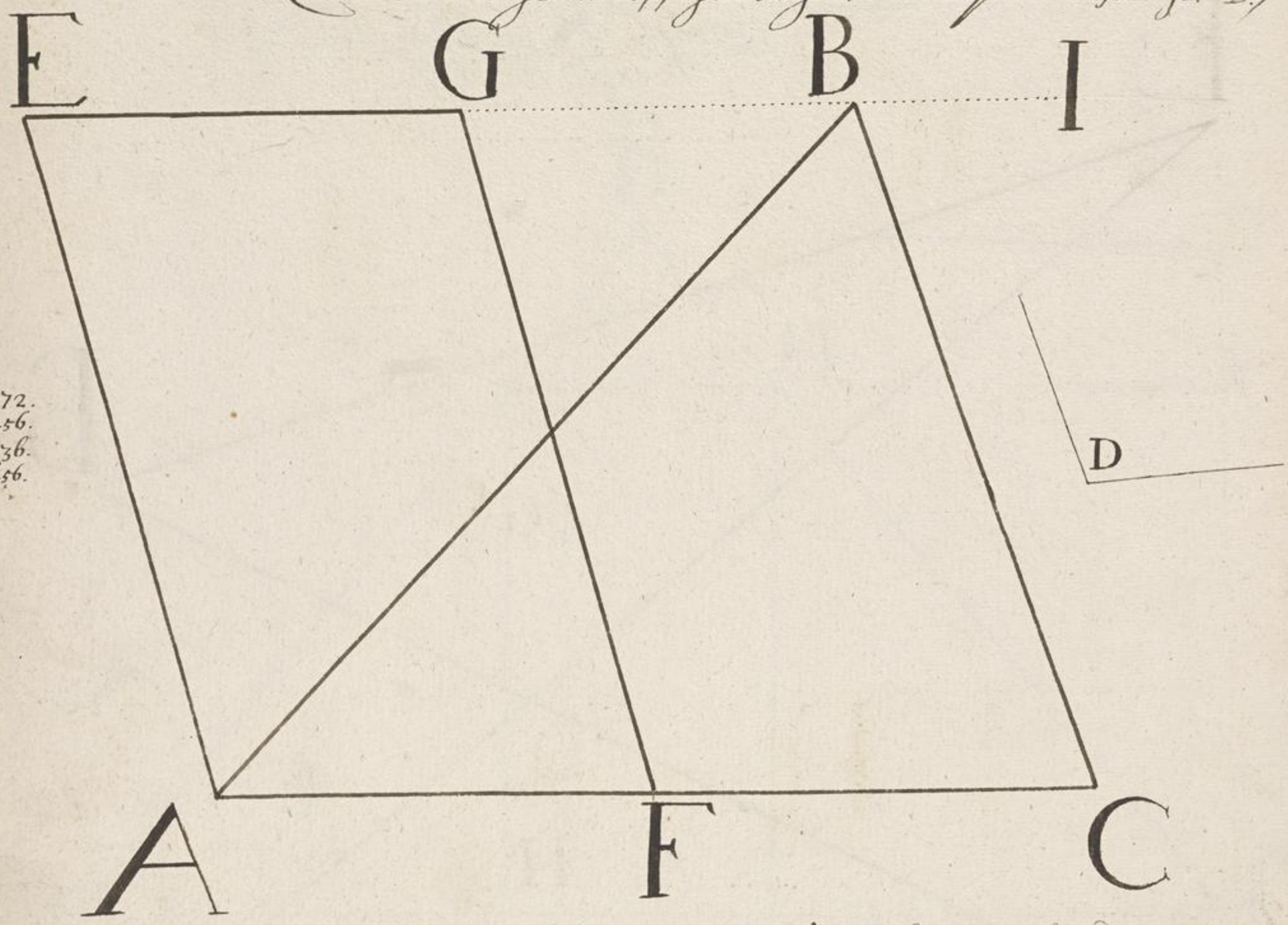


Draw from the end B the point H, a blinde line as BH, then from C draw a parralel thereunto as CE, to cutt the line HE, in E; Lastly, draw the line BE; so shall you include the triangle G, equall to the Triangle H, cutt off; which was required.

Prob. 75.

To make a Romboides equall to a Triangle given having two opposite angles each equall to an angle given.

Let ABC, be a Triangle given, and it is required to reduce the same into a Romboides hauinge two opposit angles each equall to ye angle D.



AC. 72.
p. fro. B. 56.
A H. 36.
p. fro. G. 56.

1st, by the point B, draw a parralell to ye base AC, as EBI, then from the end A protract an angle equall to ye given angle D, as CAE, and draw AE, till it touch yt parralell in E, that done take halfe the base AC, which is AH, and set it in the same parralell from E to G; Lastly, draw HG, so shall you include the Romboides AEGH, equall to ye triangle ABC, and hauing two opposite angles E, and H, each equall to ye angle D, which was required.

Prob. 76.

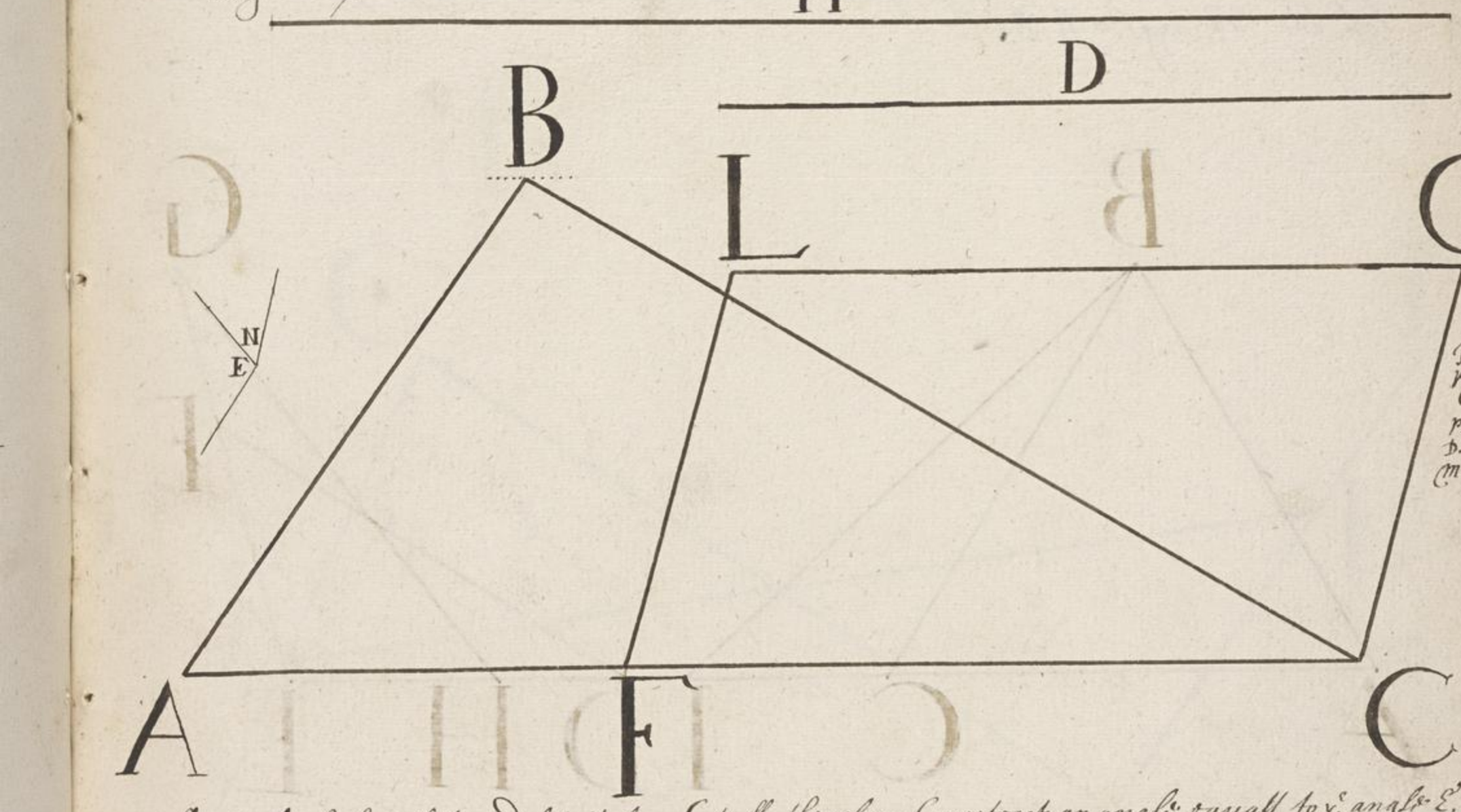
To reduce a Romboides into a Triangle.

Let in the last diagram, AEGH, be a Romboides given to be reduced into a Triangle. First, increase the sides EG, and AH, to I, and to C, then set AH, the breadth of the Romboides from H, to C, so that AC, may be twise AH, That done, take in the line EI, any point at pleasure as the point B, from whence draw the lines AB, and BC, so shall you include the triangle ABC, equall to the Romboides AEGH. required.

Prob. 77.

To make a Romboides, whose length is limmited equall to a Triangle giuen, and also, hauing two opposit angles each equall to an angle giuen.

Let ABC, be a triangle giuen, and let it be required to make a Romboides equall thereunto whose length shall be as longe as y^e^ line D, and hauing two opposit angles, each equall to the angle E.



AC: 96.
p fro. B. 40.
CH. 60.
p fro. L. 32.
D. 60.
M. 96.

first, take the length D, and set it from C, to K, then from C protract an angle equall to ye angle E, as KCG, that done, say by the 21.th Prob: if the line D, giue the perpendicular from B, to AC, what halfe the base AC, answer a line; at which distance draw a parrallell to AC, as GL (of the length of CK,) Lastly, draw KL, so shall you include ye Romboides CGLK, whose length CK, shall be equall to ye giuen line D, and his opposite angles C, and L each equall to ye angle E, which was required.

Prob. 78.

To make a Triangle equall to a Romboides made by Chance, whose base shall be equall to a line giuen, and hauing an angle equall to an angle giuen.

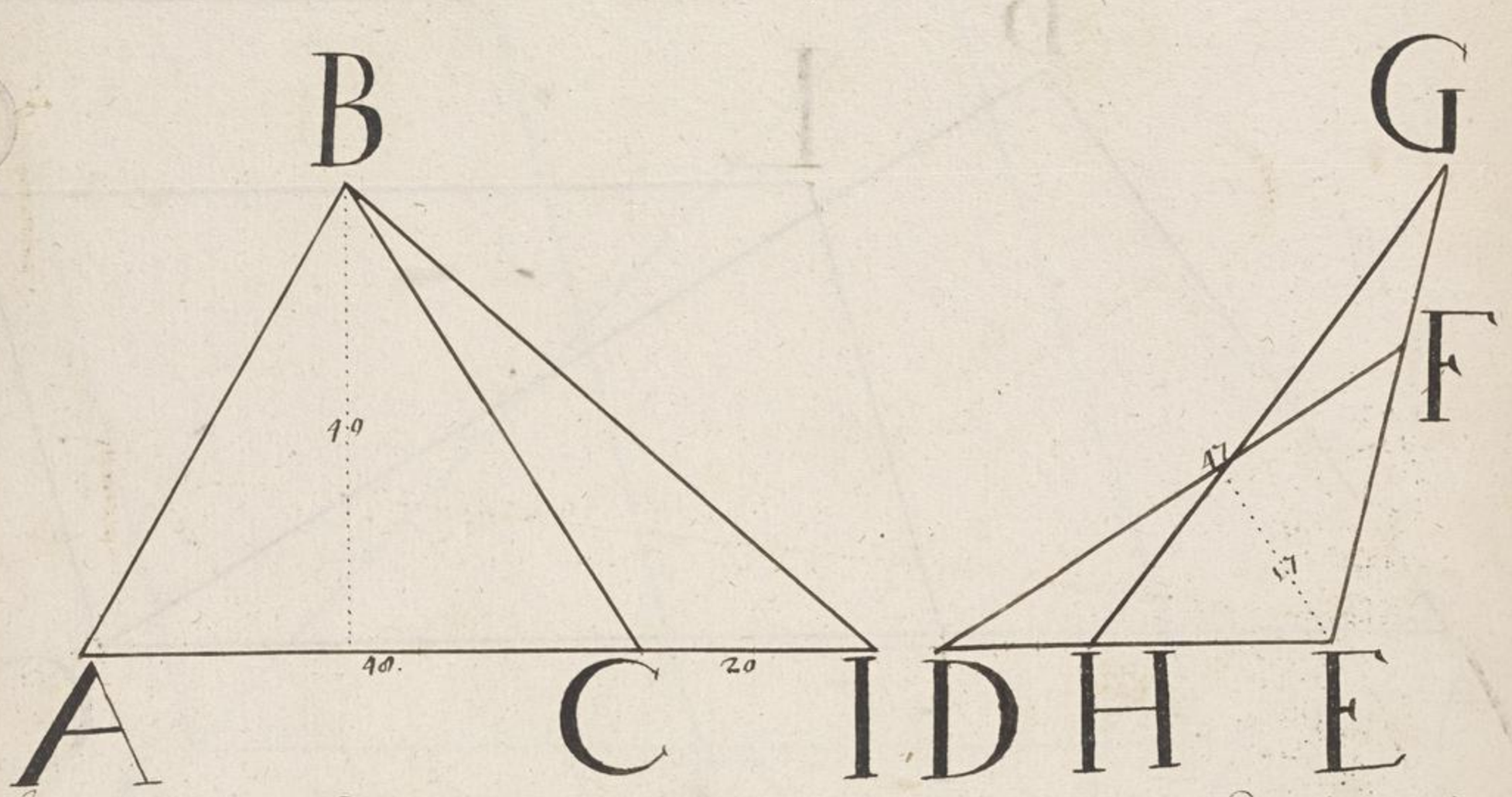
Set in ye former diagram the Romboides CKLG, be giuen, and it is required to make a triangle equall thereunto, whose base shall be of ye length of the line M, and hauing one angle equall to ye angle N,

first, increase ye side CK, to A, then set ye line M, from C, to A, for ye base; that done; from A protract an angle equall to ye angle N, as ye angle BAC, by drawing the line AB, Then say by the 21.th Prob: if halfe ye base giue ye perpendicular (of ye Romboides) from L upon the side CK, what ye length CK, answer, a line; at ye distance whereof, draw a parrallell to the base AC, as ye pricked line B, to cutt AB, in B; Lastly, draw the line BC, so shall you include the triangle ABC equall to the Romboides KLGC; and hauing an angle at the angle BAC, equall to the giuen angle N, which was required.

Prob. 79.

To add two scutrall Triangles together, and to make one of them both, whose perpendicular shall be equall to the perpendicular of one of ye given Triangles

Let ABC, and DEH, be two triangles given, and it is required to make one equall to them both, whose perpendicular shall be the perpendicular of the Triangle ABC,



By the 10th Problem, reduce the triangle DEH, into another triangle whose perpendicular may be equall to ye Perpendicular of the Triangle ABC, as into the Triangle ABC, viz. AC, to I, then take EH, the base of ye Triangle GEH, and fit it from C to I; Lastly, draw the line BI; so shall you include the triangle ABC, and DEH, together, and having ye Perpendicular of the triangle ABC. which was required.

Prob. 80.

To substract one Triangle from another and to make the triangle left, to have the Perpendicular of one of the given Triangles.

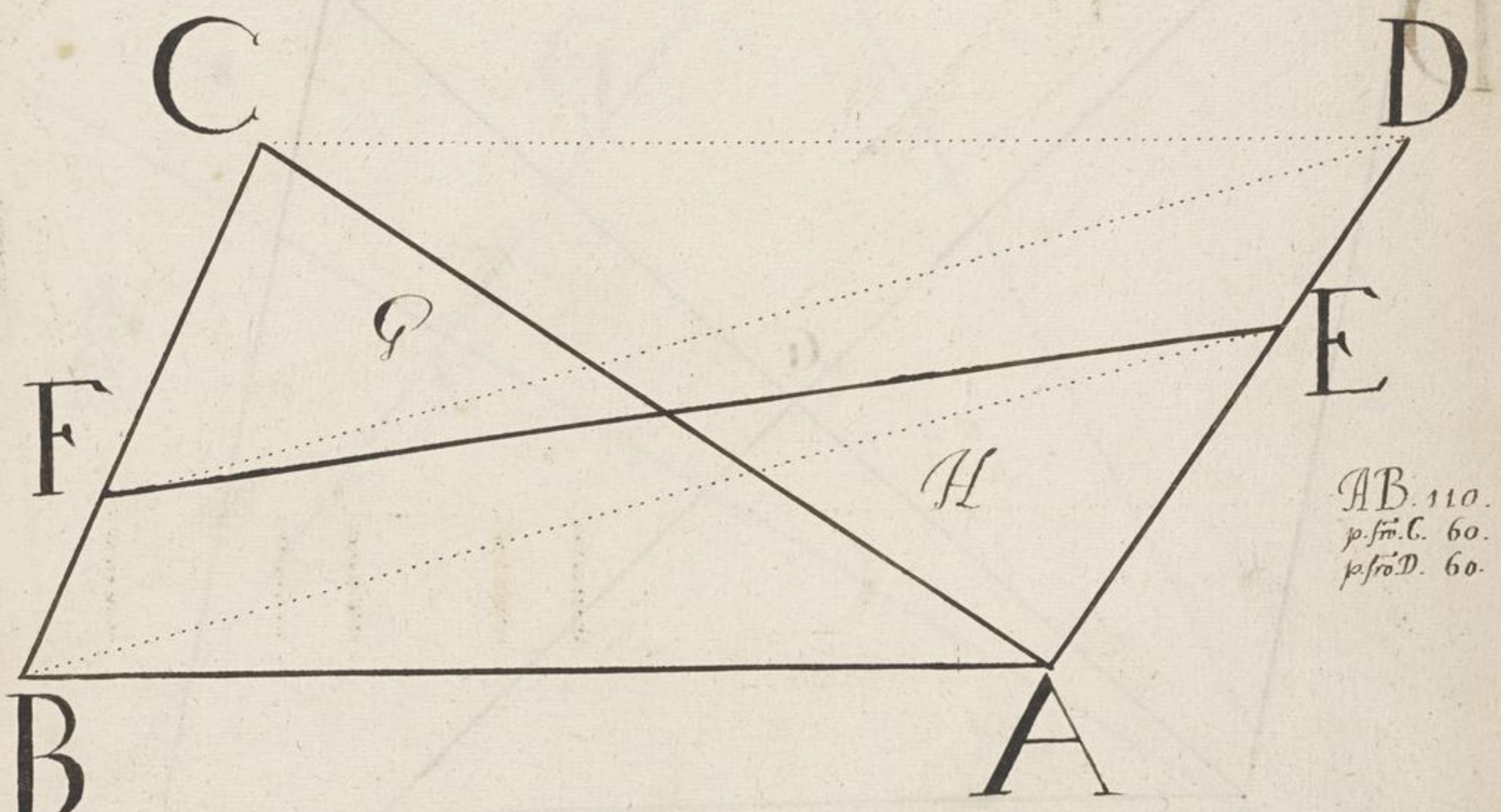
Let in the last diagram ABI, and DEH, be two Triangles given, and it is required to substract the Triangle DEH, from the triangle ABI, and to make the Triangle left, to have the perpendicular of the Triangle ABI,

By the 24th Prob: bringe the triangle DEH, into another triangle, whose perpendicular may be equall to ye perpendicular of the Triangle ABI; (from B, on his base AI,) as into the triangle GEH whose base is EH, which take and fit from I, to C, (upon the base AI,) then draw the line BC; so shall remand the triangle ABC; having the proportion perpendicular of the given Triangle ABI; which, was required.

Prob. 81.

Heire is a Triangle as ABC; and from A is drawne a right Line as AED; now from the point E, in that Line, it is required to draw a Line through AC, (as EH) in such sort that the Triangle G, cut of, be equall to the triangle H.

Taken in.

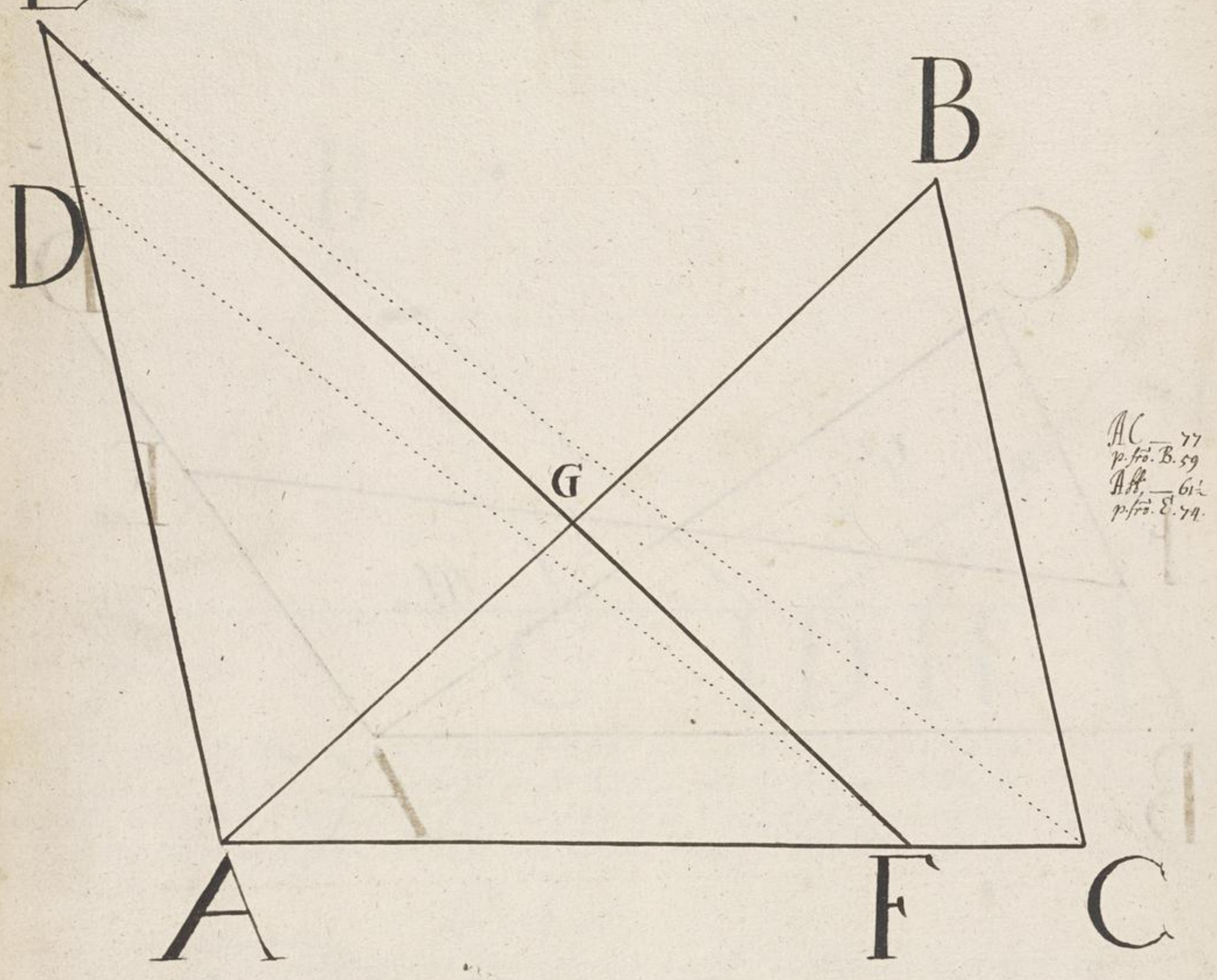


AB. 110.
p. frō C. 60.
p. frō D. 60.

First by C, drawe a parrallell to the base AB, as CD, to cutt the Line AED, in D; that done, drawe the perpendicular pricked Line BE, then from the point D, drawe a parrallell thereunto to cutt the side CB in F. Lastly, drawe the Line FE, which performeth the desire.

Prob 82.

There is a Triangle as ABC, and from the end A, there runns a right line, as ADE, Now it is required from E, to draw a line to some part of the base AC, (as Eb,) in such sort that the triangle AEb, may be equall to the Trapezia BCbG,

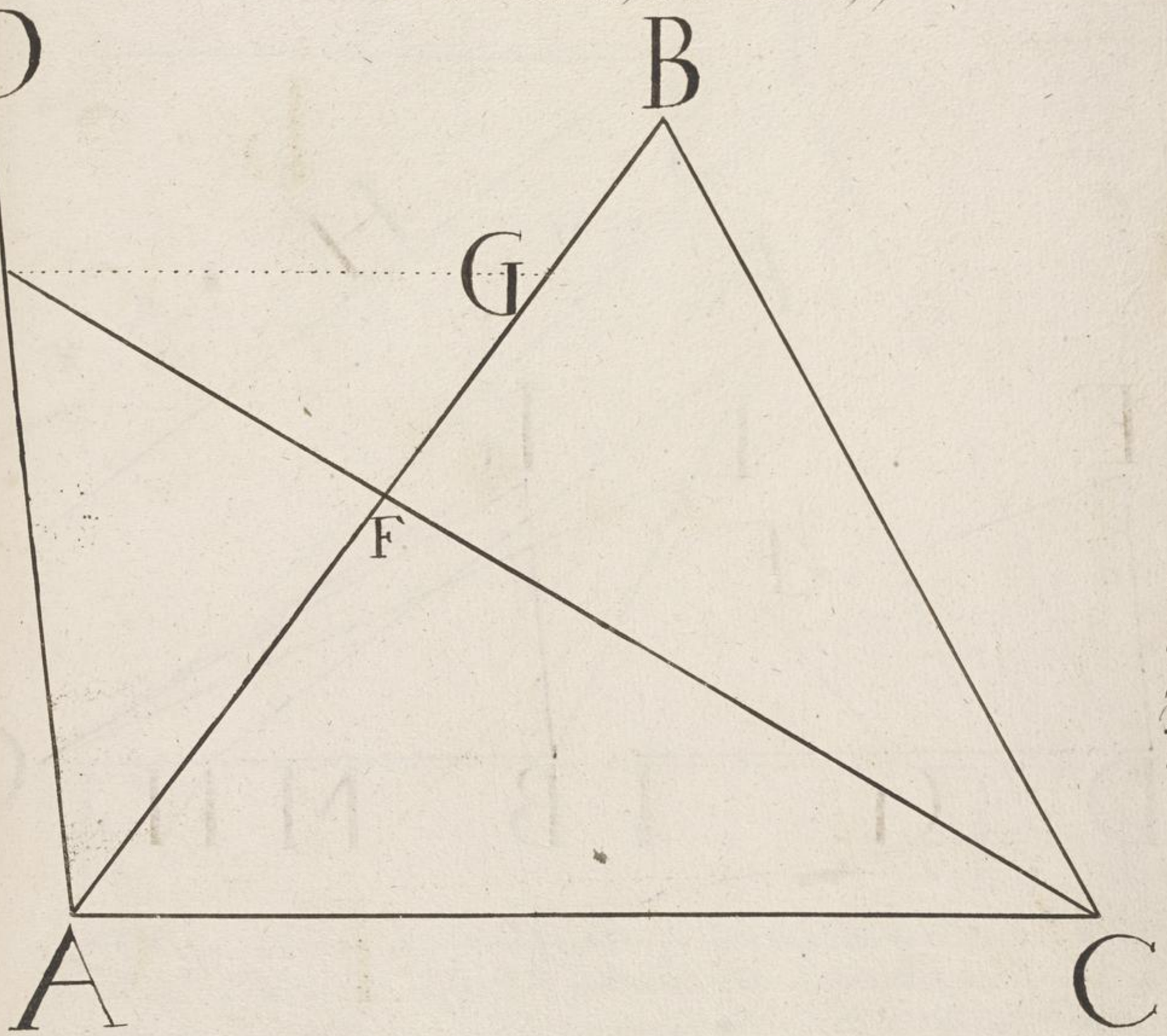


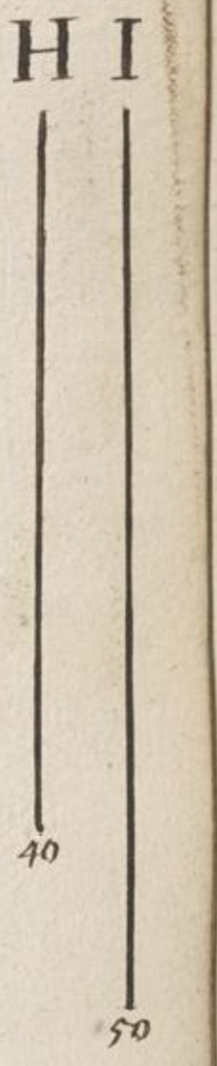
AC — 77
p. fro. B. 59
Ab, — 61½
p. fro. E. 74.

First draw the pricked line EC, then by B, draw a parralell to the base AC, to cutt the line AE, in D, that done by D, draw a parralell to EC, to cutt the base AC, in b, Lastly Draw the line Eb, so shall the Triangle AEb, be equall to ye Trapezia BCbG, required.

Prob. 83.

There is a triangle as ABC, and from A. runeth a line as AD, now it is required from the angle C to draw a line to some part of AD, (as CE,) in such sort y^t. the Triangle ABC, cut off, together with the Triangle AEB, taken in, (viz: the whole Triangle CAE,) may have proportion to the Triangle given as the line H, to the line I,





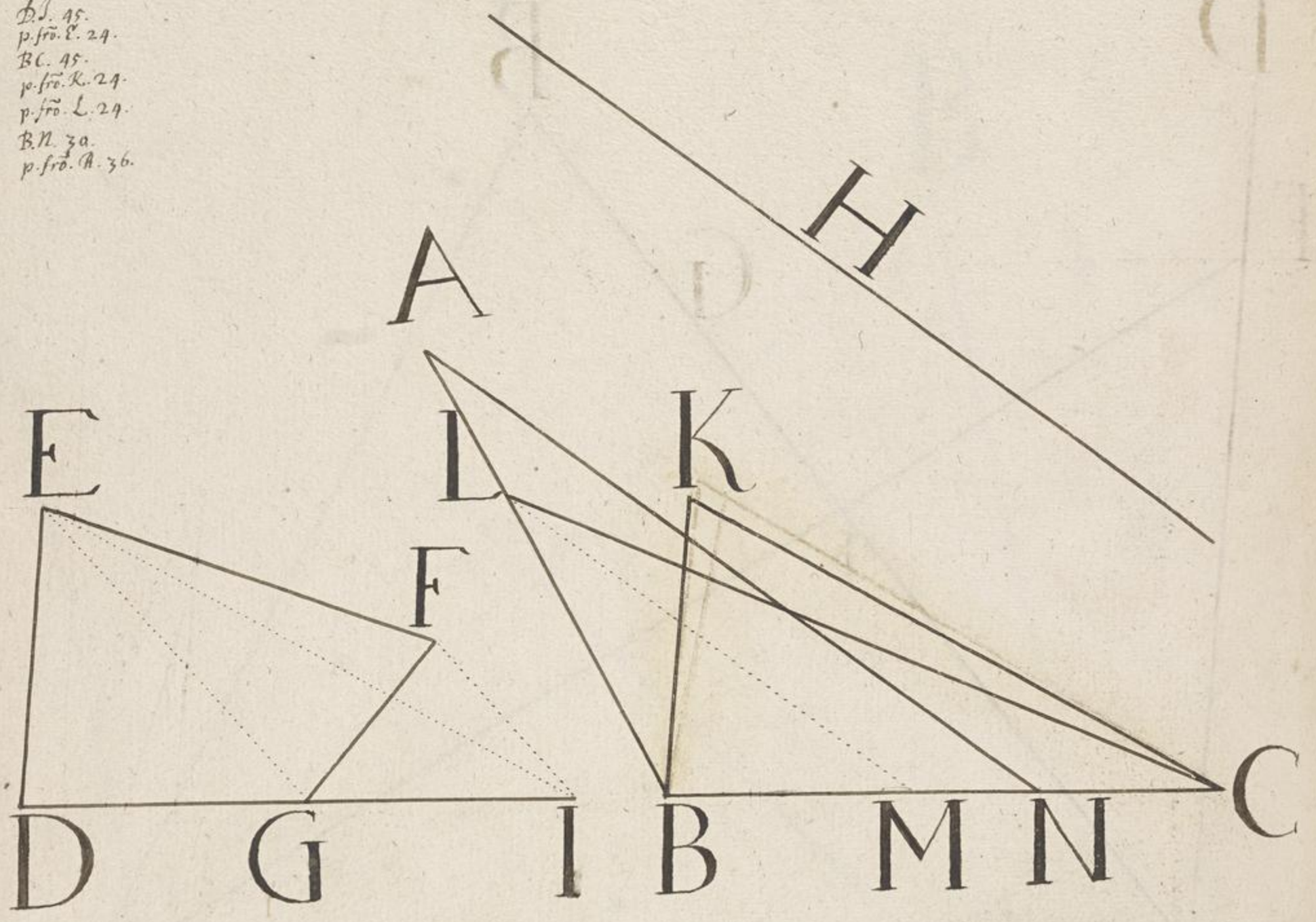
AB. 86
p. fro. C. 72
AC. 90
p. fro. E. 56
AE. 69
p. fro. E. 55½

By the 21.th problim say, if I, give H, what AB, answer AE, then by E, draw a partall'll, to y.e base AC, to cutt the line AD, in E, Lastly, draw CE, so shall you include the Triangle CAE, which performeth your Desire.

Prob. 84.

There is an angle as A B C, from the which it is required to cutt off a part equall to the Trapezia D E F G, with a parralell to the line H.

D.I. 45.
p. fro. E. 24.
B C. 45.
p. fro. K. 24.
p. fro. L. 24.
B N. 30.
p. fro. A. 36.

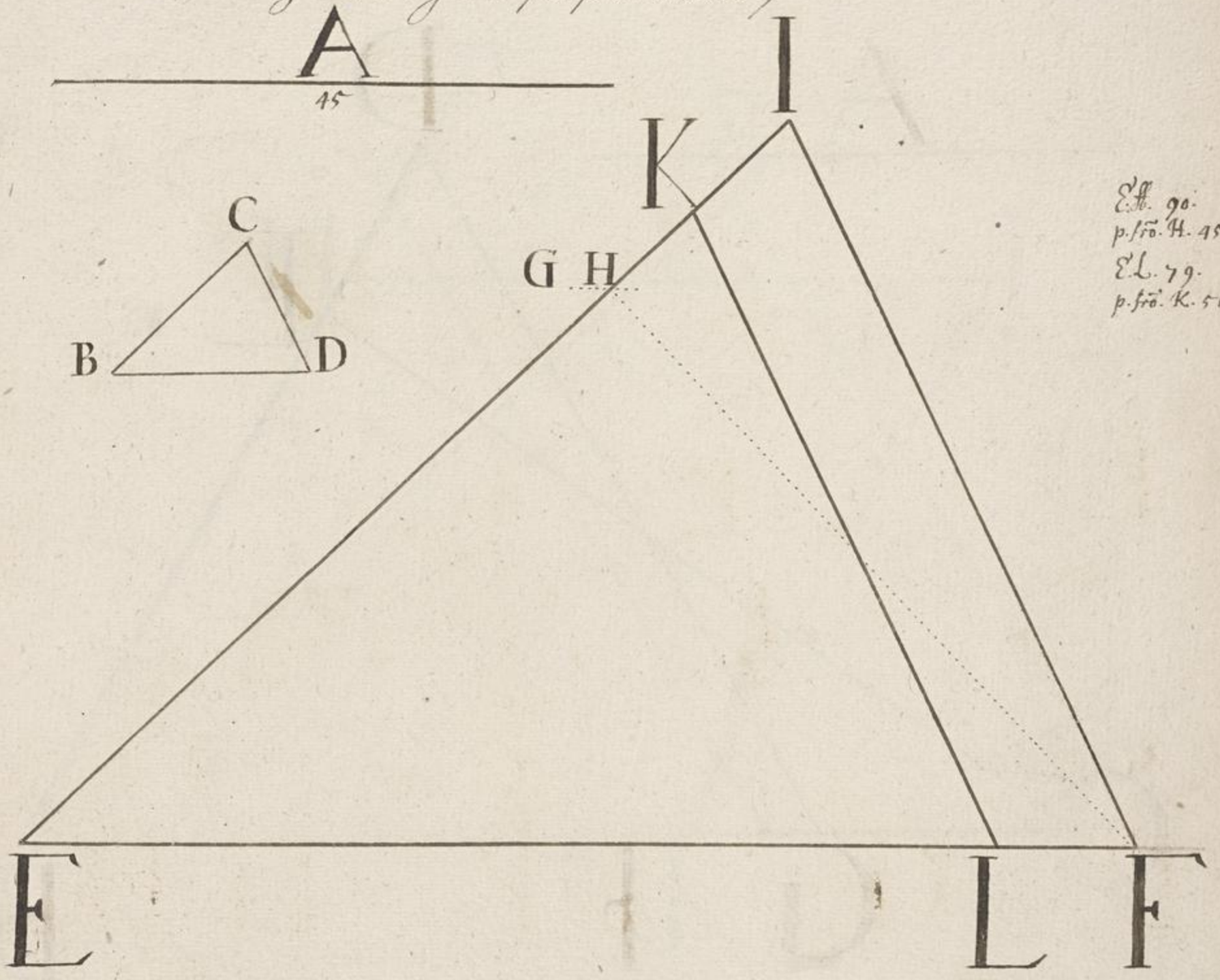


First reduce the Trapezia by the 49th Prob: into the Triangle B I, which Triangle set in the angle C B A, beginning at B, as appeareth by the Triangle C B K, that done, by the 10th Problem reduce the triangle C B K, into the Triangle C B L, having the same base C B, but the angle at B, equall to the given angle C B A, that done by L, draw a parralell to H, the line given, to cutt B C, in M; Then find a mean proportion, betweene B M, and B C, as B N, Lastly by N, draw a parralell to H, as N A, to cutt the side B L A in A, so shall you cutt of from the angle A B C, the Triangle A B N, equall to the Trapezia D E F G, with a parralell to the given line H, as was required.

Prob. 85.

A figure being given, to make an other in Area equall thereunto but like a figure given.

Let the line A, be the side of some square given, and it be required to reduce the same into a triangle like the triangle BCD, with all his angles, and sides proportionall.



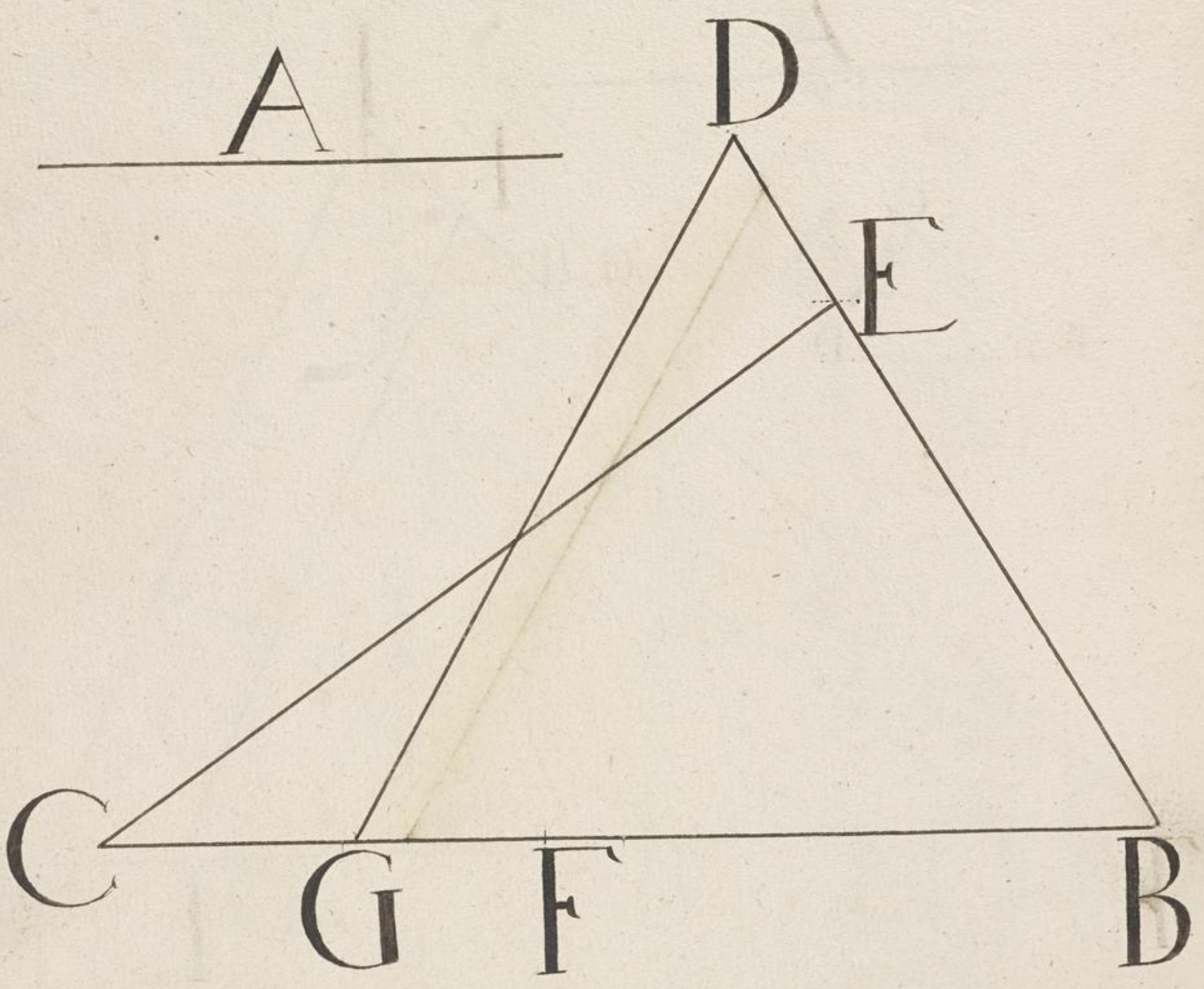
Eff. 90.
p. fro. H. 45.
EL. 79.
p. fro. K. 51 1/4

first lay down the distance of the line A, twise from E to H, then at ye distance of the line A draw a parralell to to E,H, as the pricked line G, that done, from the end E, protract an angle equall to the angle B, of the given Triangle BCD, as the angle HEH, to cutt the parralell G, in H, and draw the pricked line HH, for shall the Triangle EHH, be equall to that square, whose side is the line H that done from the end H, protract an angle equall to the angle D, (of the lesser triangle) as the angle EHI, to cutt EH, being drawne forth in I, so shall the triangle EHI, be like the little triangle BCD. but more in Area then the triangle EHH, (which is equall to the square given) therefore to make one equall thereunto, find a mean proportion by the Prob: betweene EH and EI, which is EK, then by K, draw a parralell to I,H, as KL, for shall the triangle EKL, be equall to that square whose side is the line A, and having all his angels like the angels of the given triangle BCD, which was required.

Prob. 26.

To make an Equilaterall triangle, equall to a Square.

Let A be the side of a square given, and it is required to make an Equilaterall triangle equall thereunto.

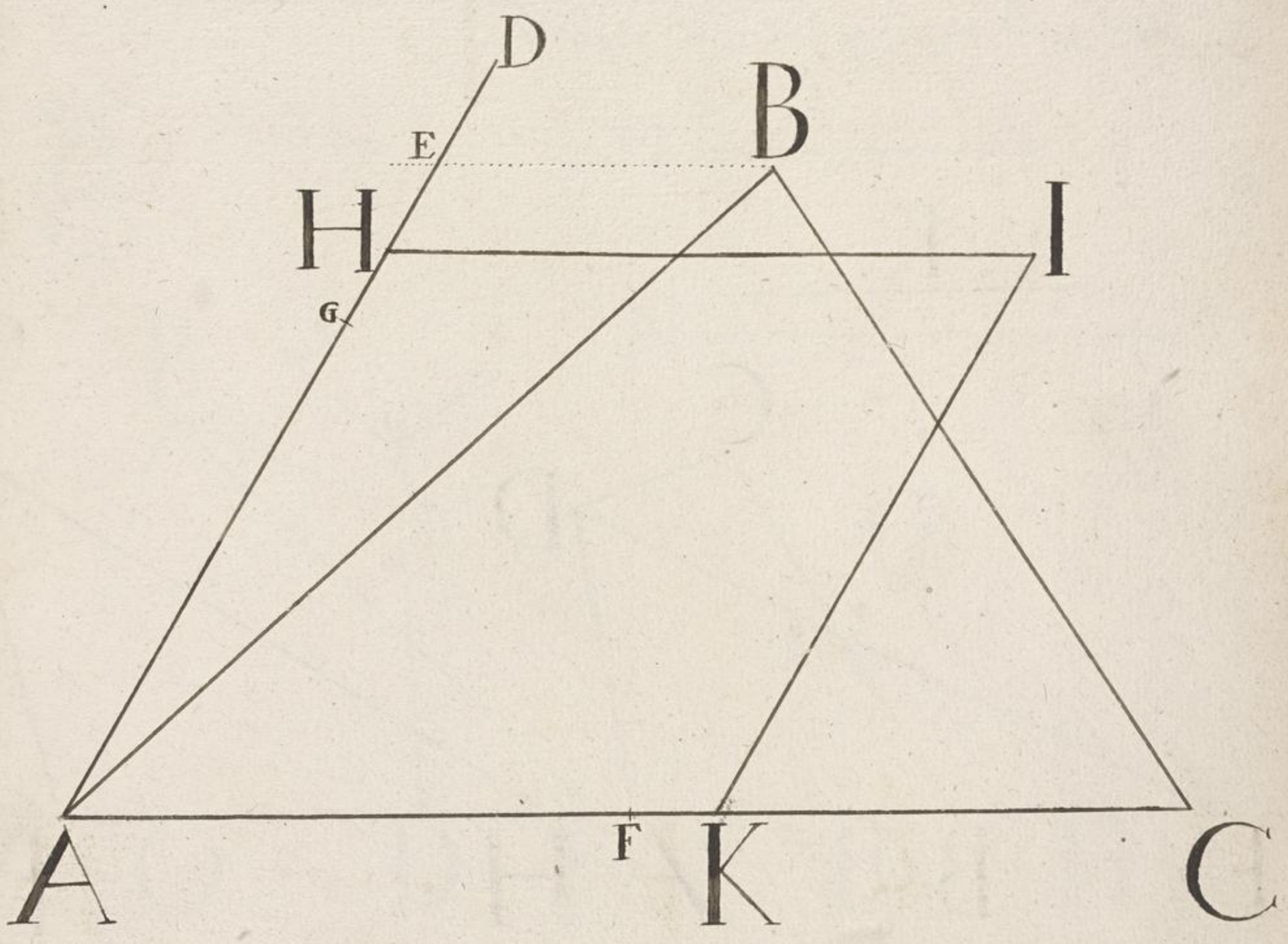


First, draw the line BC, just of twice the length of the given line A, then from the end B, protract an angle equall to the angle of an equilaterall triangle; as ∠BD, that done at the distance of the line A draw a parralell to CB, as the pricked line E, to cutt BD, in E, then set that distance BE, from B to F, Lastly, find a meane proportion betweene BF, and BC, which is BG, which set from B to D, and draw the line FD, so shall you include the equilaterall triangle BDF, equall to CBE, or the Square given, whose side is A, which was required.

Prob. 87.

To make a Rombus equall to a Triangle given.

Let ABC, be a Triangle given, and it is required to make a Rombus equall thereunto.



First from the end A protract an angle equall to one of the acute angles of the Rombus, which is the angle of an Equilaterall triangle (as the angle CAB, then by the point B draw a parrallell to the base AC, to cutt AD in E, that done take always halfe the base AC, (as AK, and fit it upon the line AD, from a to E, Lastly, betweene AE, and AE, finde a meane proportion as AH, (for the sides, whose of make the Rombus AHIK, which shall be equall to the given triangle ABC, required.

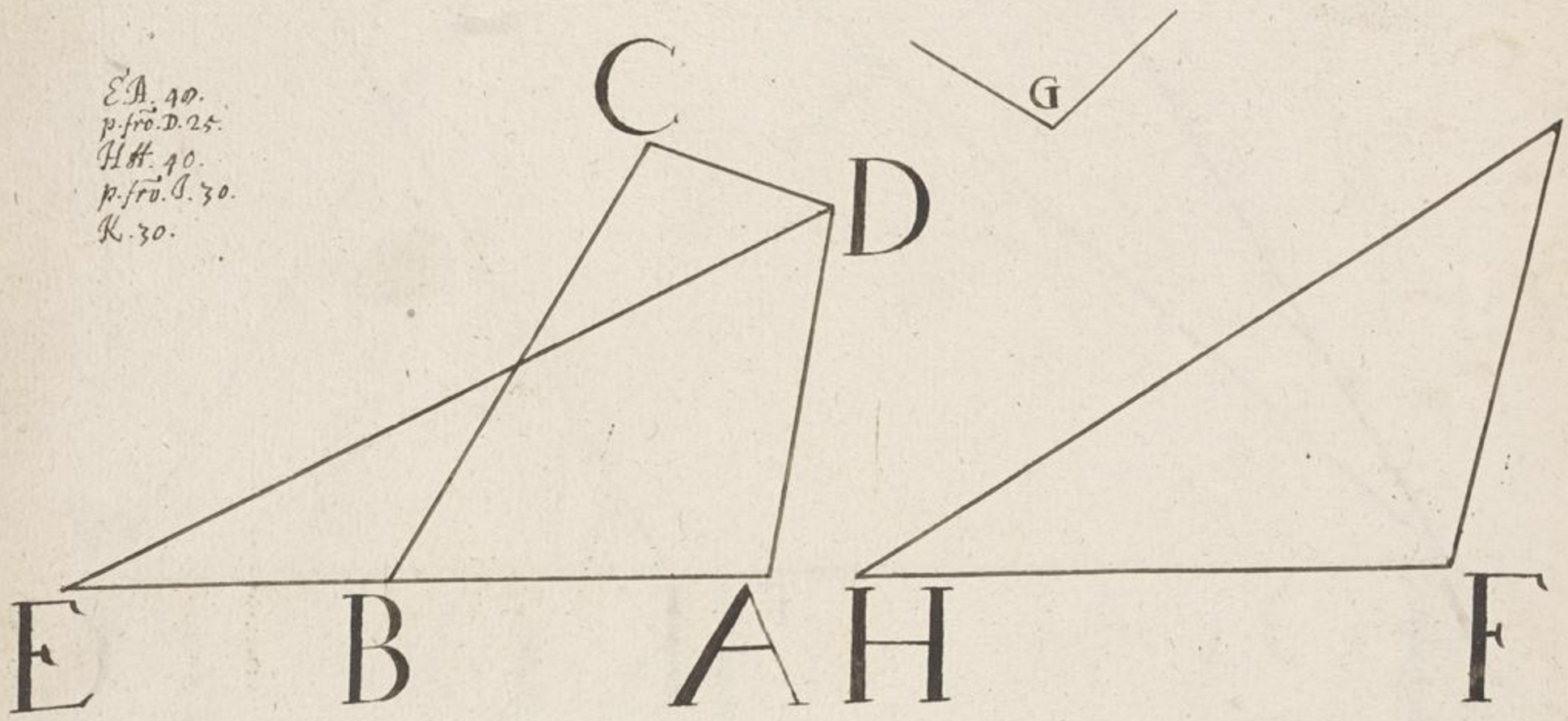
These forelast Problemes haue there demonstration out of the 37. 1. and the cor: of the 19. 6. of Euclid.

Prob. 33.

To reduce a Trapezia into a Triangle, whose base is limited, and yet shall haue an angle equall to an angle giuen.

Let ABCD, be a Trapezia giuen, and let it be required to make a Triangle equall thereunto, whose base shall be the line HH, and hauing one angle equall to the angle G.

K



EA. 40.
p. fro. D. 25.
HH. 10.
p. fro. I. 30.
K. 30.

First by the 49.th Prob: reduce the Trapezia into the triangle DAE, then from the end H, (of the giuen line HH,) protract an angle equall to the angle G, as the angle HHI, by drawinge the line HI, that done, say by the 22.th Prob: if HH, giue EA, what the perpendicular from D, upon the base EA (being increased); answer the line K, at which distance, draw a line parralell to HH, to cutt HI, in I, Lastly, draw HI, for shall you include the Triangle HHB, equall to the Trapezia ABCD, and hauing one angle equall to the giuen angle G, which was required.

37.1
23.1
12.6
31.1

Prob. 89.

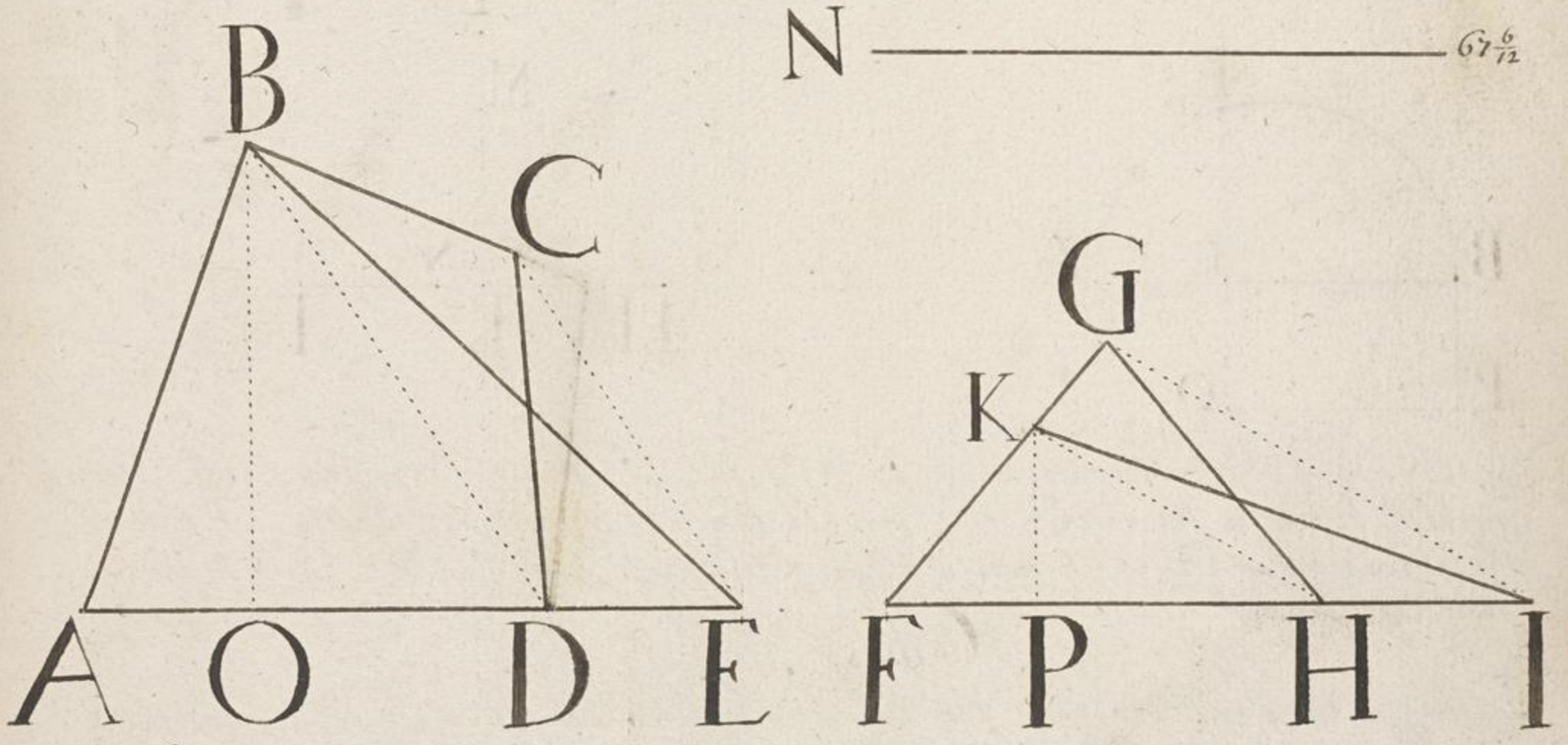
Two figures being given, and a right line, to find another line in proportion, to the line given, as the one figure to the other:

Let ABCD, and FGH, be two figures: also, Let M, be a line given How it is required to find another line in proportion to M, as the Trapezia ABCD, to the Triangle FGH,

AE. 45
p. BO. 32
FH. 30
p. from E. 10.
FI. 45
p. KP. 12.

M ——————— 25.

N ——————————————— 67 6/12



By the 19th Prob: bring the Trapezia ABCD, into the Triangle ABE, whose base is AE, and let fall his perpendicular BO; Then reduce the triangle FGH, into an nother triangle, whose base may be equall to the said base AE, as into the Triangle FKI, and let fall his perpendicular
37.1. KP, so shall the triangle FKI, or FGH, (because the are equall) be in
1.6. proportion to the Trapezia as the perpendicular KP, to the perpendicular
12.6 BO; Now if KP, were equall to the line M; then BO, should be the line required, but for as much as it is not, therefore say by the 21th Problem if KP. were the line M, what BO; answer, the line N, and so is found that the line N, hath the same proportion to the line M, as the Trapezia ABCD, to the Triangle FGH, which was required.

Prob. 90.

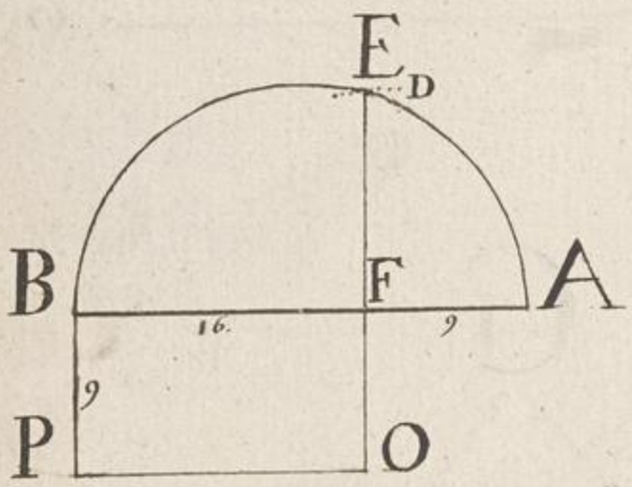
To divide a line given into two such parts, that another line (so it be not about half the given line) may be a mean proportion betwixt the parts.

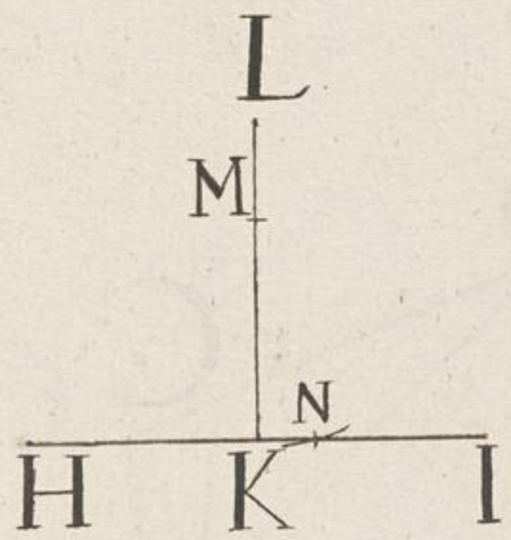
Let AB, be a line given, to be divided into two such parts, that the line G, may be a mean proportion betwixt those parts.

G

12.

G equall to Ef.





Upon the line AB, discribe the semicircle AEB, then at the distance of the line G, draw a parralell to AB, as the prickd line D, to cut the Circomference in E, Lastly, let fall the the perpendicular Ef, which cutteth AB, into two parts in f, so is Af, and fB, the two parts required.

Orthus.

Again, in the same Diagram, let HI, be the line, and let it be so divided, that the line G, may be a mean betwixt the two parts.

Divide HI, in the midst in K, and upon K. erect a perpendicular at length as KL, that done, set the line G, from K to M, then take half HI, viz: HK, or KI, and setting one foot in M, with the other crosse the line HI, in N, so shall I, N, be the lesser part, and NH, y. grater.

Prob. 91.

To reduce a square into a long square, whose length and breath is limmited in a stright line, wherein is to be noted, that the side of that square may not exceed half the line given.

Let AB, in the last diagram be a line given, and let G, be the side of some square: Now it is required to make a long square equall to that square whose side is the line G, and yet the length and breath short of togither shall make but the line AB.

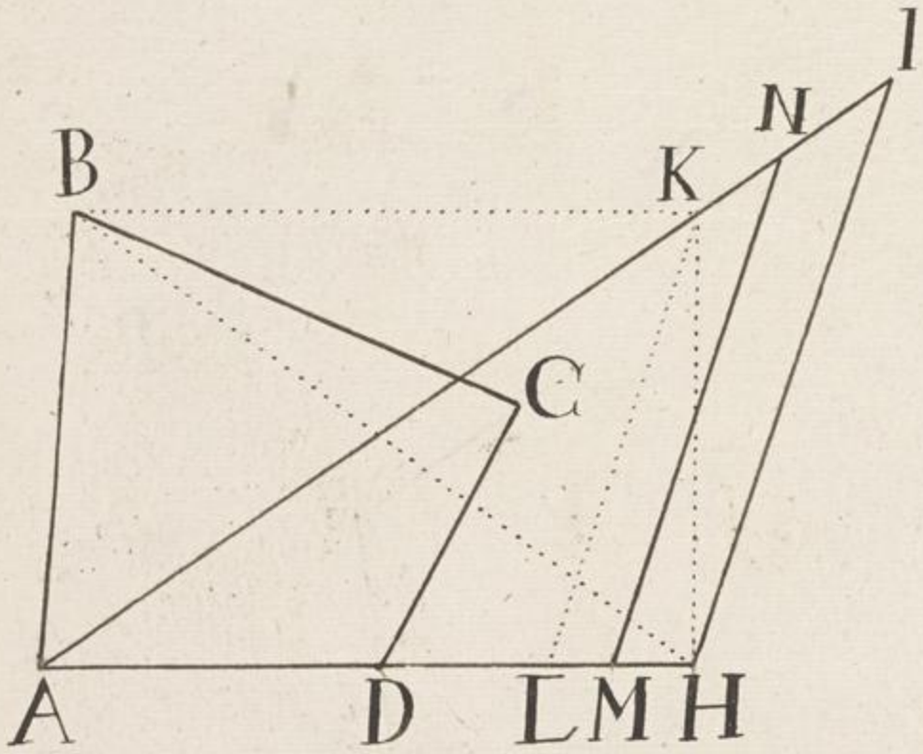
Divide the line AB, as before taught in f, in such sort, that the line G, may be a mean proportion betweene the parts Af, and fB, so shall Af, be the breath, and fB, the length, whereof make y.
47.1. 13.6. long square BfOP, which shall be equall to the square, whose side is the line G, and yet the length Bf, and the breath fA togither, shall make but the given line AB, as was required.

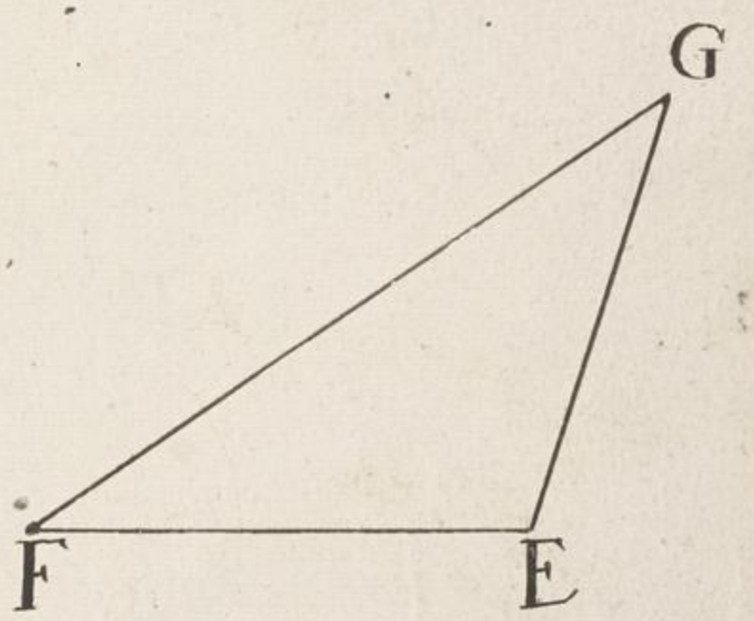
Prob. 92.

To make a Triangle equall in Area, to a figure given, and yet like a Triangle assigned.

Let A B C D, be a figure given, and it is required to make a Triangle equall thereunto, but like the triangle E H F,

A.H. 36.
p.fro. B. 25.
A.N. 50.
p.fro. H. 10.



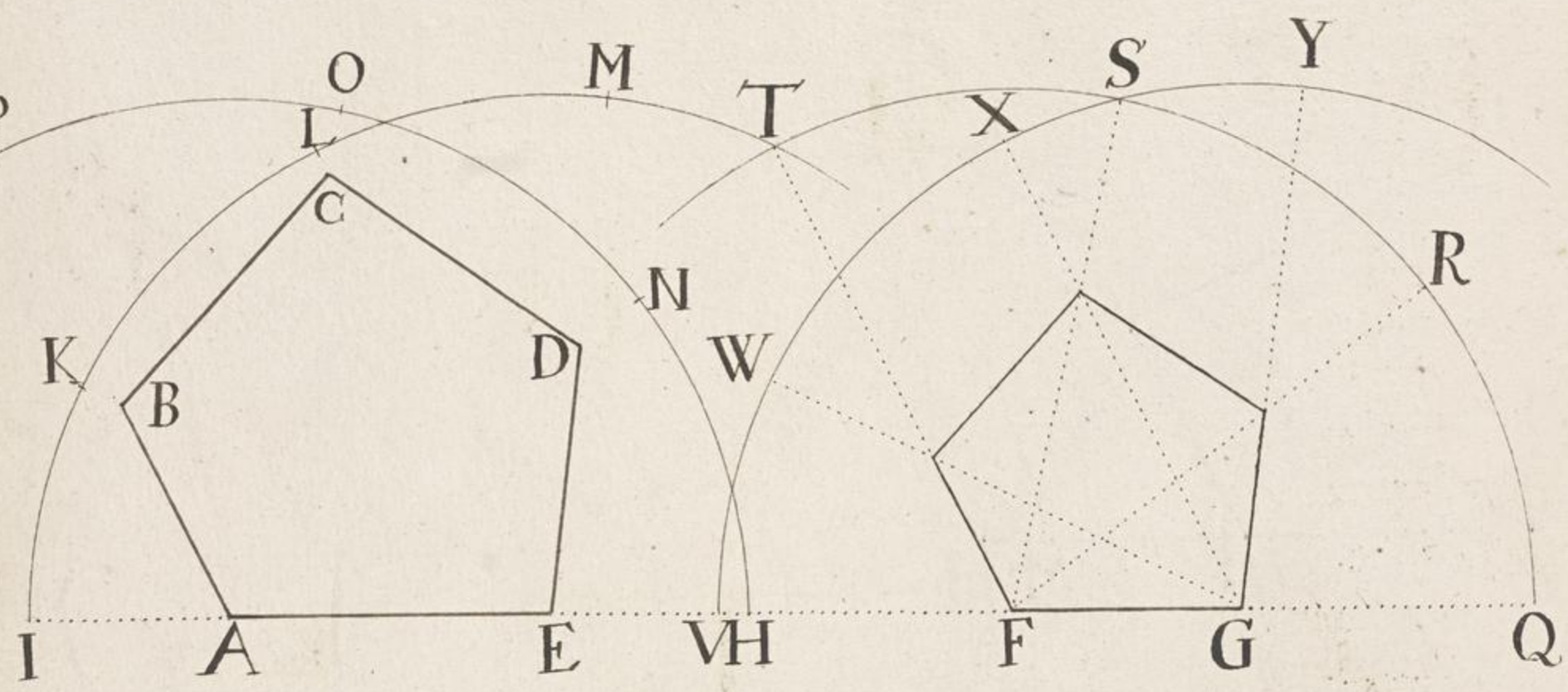


By the 44th Problem bring the Trapezia A B C D, into the triangle A B H, then from the end A, protract (by the 6th problem) an angle, as the angle H A I, equall to the angle F, of the given Triangle, by drawing the line I A; again from the end H, (of the base A H,) protract an angle equall to the angle E, by drawing the line H I, (as the angle A H I,) so shall you include the triangle A I H, like the given triangle E H F, but not equall to the Trapezia: for it is too big. Therefore from B, draw a parrallell to A H, as B K, to cutt A I, in K, then draw K H, so shall the triangle A K H, be equall to the Trapezia A B C D, or the Triangle A B H, but that hath not the angle at H equall to the angle E, of the given triangle: therefore draw by the point K, a parrallell to I H, as K L, to cutt A H in L, that done between A L, and A H, finde a mean proportion which is A M, Lastly, from the point M, draw a parrallell to H I, as M, N, to cutt the side A I, in N so shall you include the Triangle A N, M, equall to the given Trapezia A B C D, and like the assigned triangle H E F, which was required.

Prob. 93.

Upon a line giuen, to diuide a figure like a figure giuen./

Let ABCDE, be a figure, and FG, a line giuen and it is required upon the line FG, to discribe a plot like ABCDE, with all his angles and sides proportionall./



First, extend the base AE, on both sides at pleasure, as to H, and to I, then setting one foot in E, make the arch, IKLM, set also one foot in A, and with the same distance make the arch HNOP, that done lay the rular by the angle A, and ouery of the points EDCB, and marke the arch HNOP, in the points HNOP, Then lay also your rular by the angle E, and ouery of the points ABCD, and marke the arch IKLM, in the points IKLM, Then with the distance AH, or EI, setting one foot in F, make the arch QRST, Also, setting one foot in G, with the same distance make the arch VWXY, Then lay the rular by the end F, (of the line FG,) and ouery of the points RST, and draw the blind lines, FR, FS, FT, Lay also the rular by the other end G, and ouery of the points WXY, and draw the other blinde lines, to crosse these blind lines in the points 1.2.3. Lastly, draw the lines F1. 1.2: 2.3: 3.G: so shall you include the figure F, 1.2.3.G, like the figure ABCDE, upon the giuen line FG, which way required./

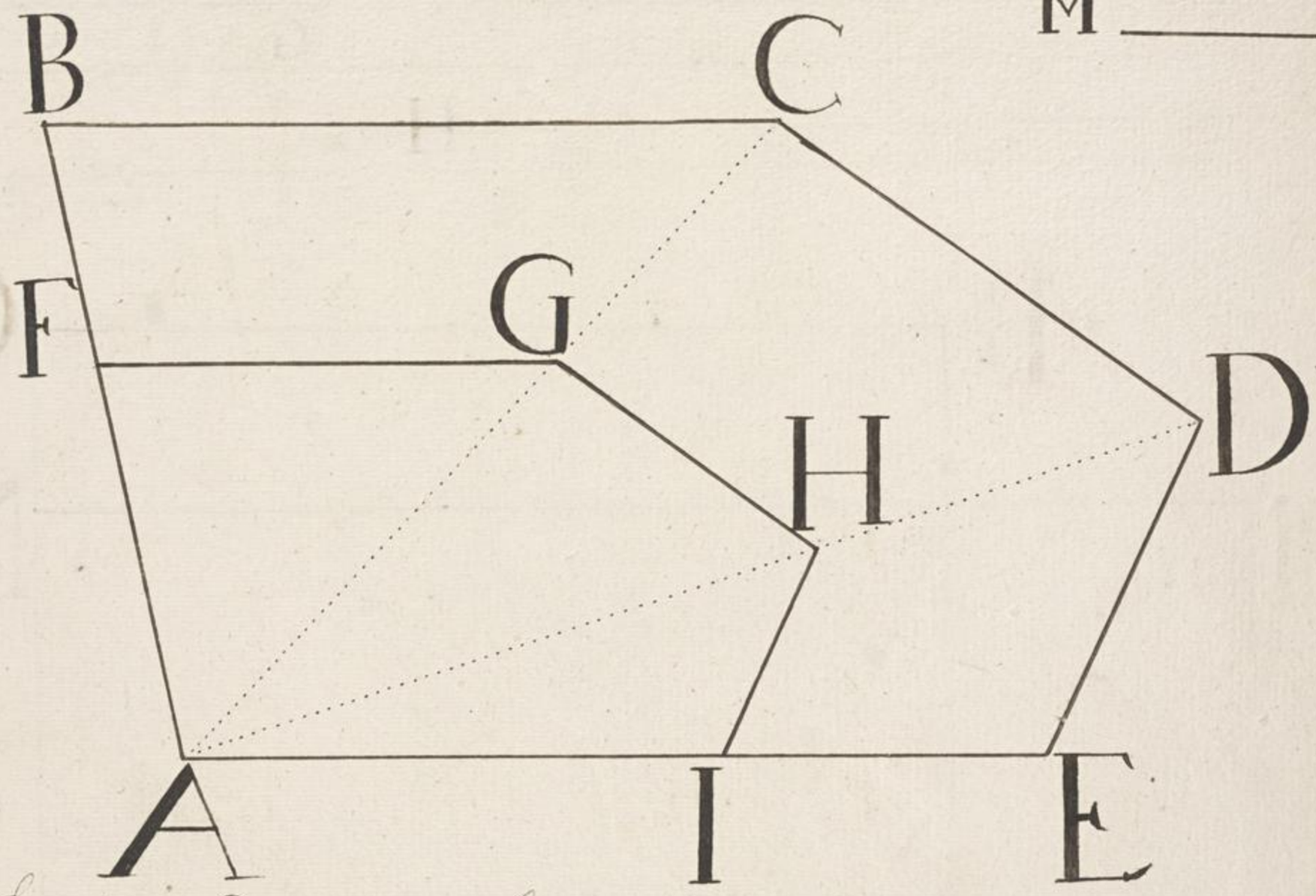
And in the same manner might you increas a plot, by making the line FG, longer, and then worke as before./

Prob. 94.

To increase or decrease a figure given, according to any proportion required.

Let ABCDE, be a plot given, to be made lesse in proportion, as L, to M.

L ____
M _____



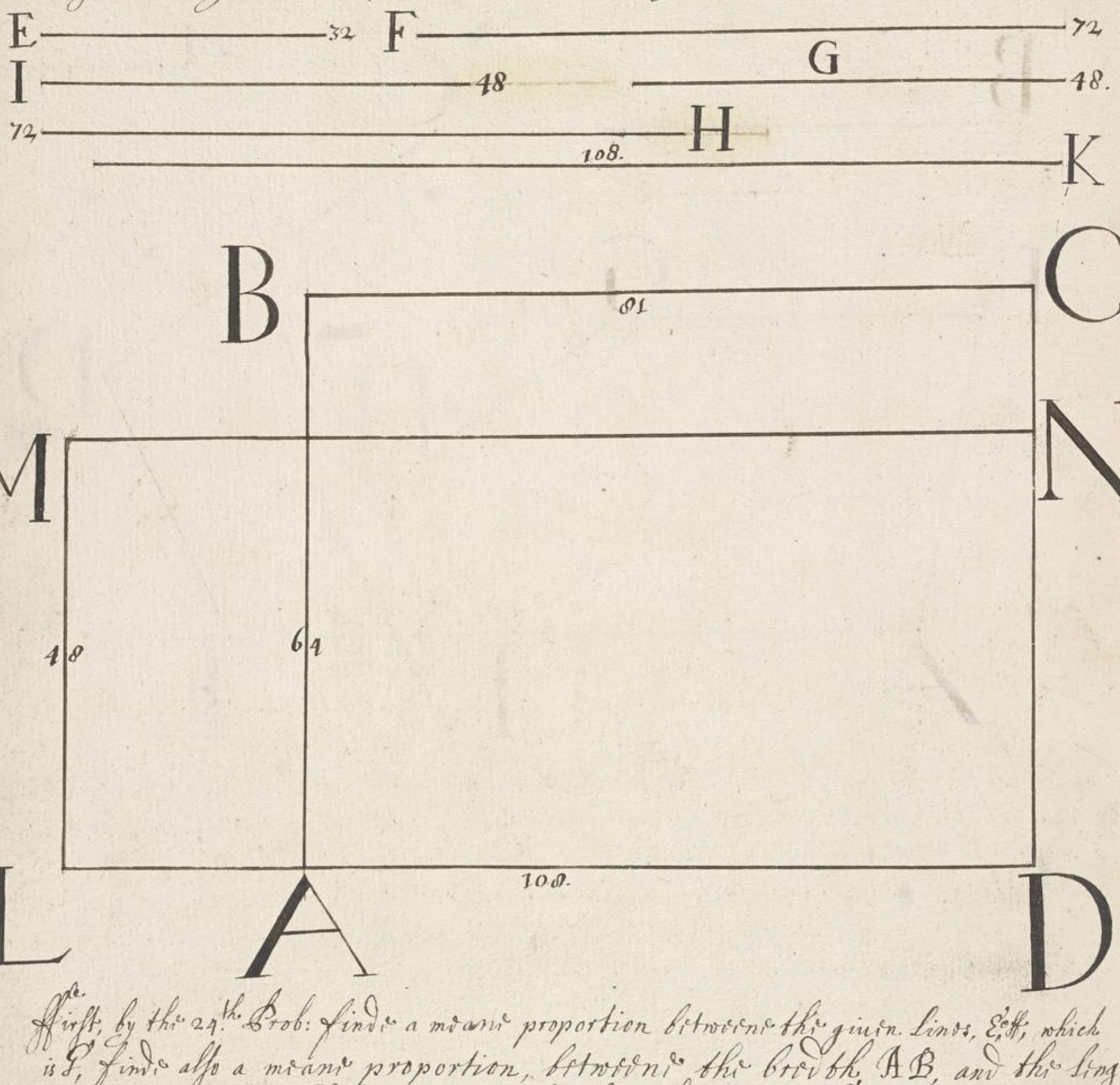
By the 53 Prob: divide one of the lines (as AB), in power as L to M, in such sort, that the power of Ak, may be to the power of AB as L to M, Then from the angle A draw lines to ye points C and D, that done by k, draw a parralell to BC, to cutt AC, in F, (as kF) Again from F, draw a parralell to CD, to cutt AD, in H, Lastly from H, draw a parralell to DE, to cutt AE, in I, for shall the plot AkFHI, be like AB. CDE, and in proportion to it as the Line L, to the Line M, which way required.

And if the lesser plot were given, and it be required to make a grater in proportion to it as M to L, then from the point A draw the lines AC, and AD, at length (also increase Ak, and AI,) that done by the 53 Prob; in large Ak, in power as M to L, which set from A to B, then by B draw a parralell to kF, to cutt AC in C, (as BC.) Likewise from C, Draw a parralell to FH, to cutt AD, in D, (as CD,) Lastly, a parralell from D, to HI, (as DE) to cutt AI, (being increast in E) so shall you include the plott ABCDE, Like AkFHI, and in proportion thereunto as the Line M, to the Line L, which was required.

Prob. 95.

To reduce a longe square into another longe square whose broadth shall have proportion to his length, as one given Line to annother.

Let ABCD be a longe square, given, to be reduced into another longe square whose broadth shall have proportion to his length, as the Line E, to y^e Line F.

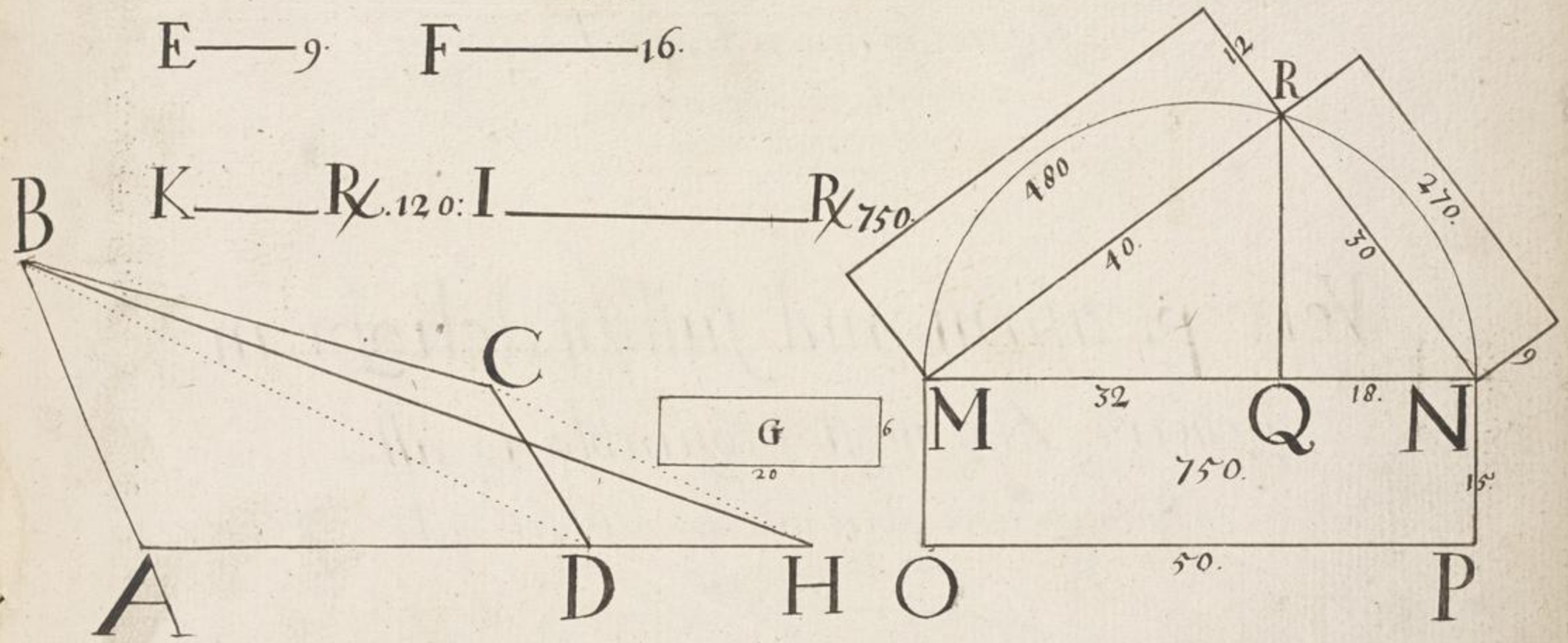


First, by the 24th Prob: finde a meane proportion betweene the given Lines, E & F, which
13 12 14 } 6. *is I, finde also a meane proportion, betweene the breadth AB, and the length BC, which is H, That done, say by the 21th Prob: if I, give H, what K; answer the Line K, for the length: Say againe, by the same rule, if I give H what E, answer the line I, for the breadth: then of the Lines I K make by the 15th Prob: L M N D. which shall be equall to the given longe square ABCD, and yet the breadth to the length in proportion as the Line E, to ye Line F, which was required.*

Prob. 96.

A figure beinge given, to make two other figures equall to it, but each of those two, like another figure given, and yet the lesser to the grater in proportion as one given line to annother.

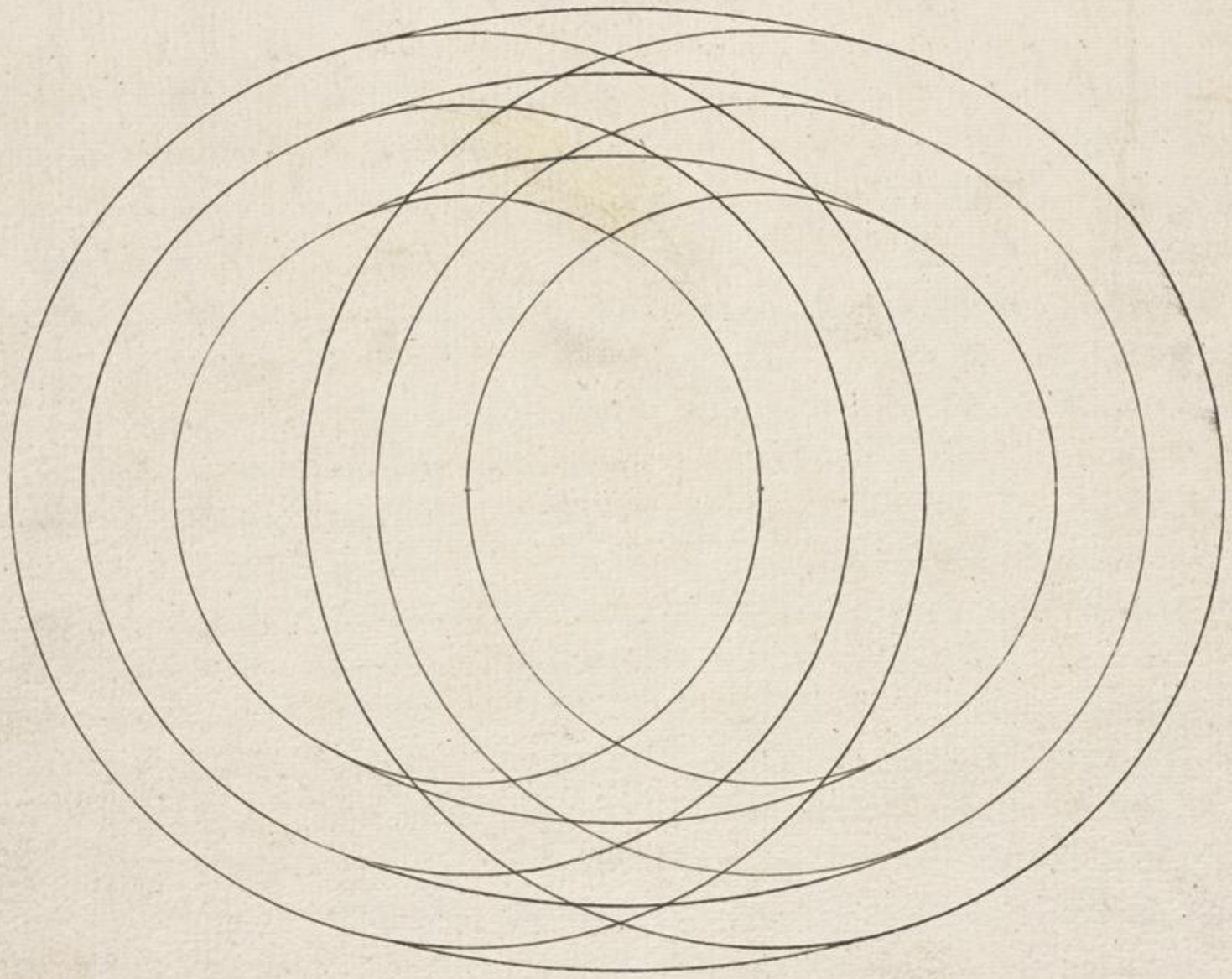
Let ABCD, be a Trapezia given, and it is required to make two other figures each to be like the figure F, and yet both together in area equall to ABCD, ye figure given, and yet the lesser to have proportion to ye grater, as the line E, to ye line ff.



first by the 49th Prob: reduce the Trapezia into ye Triangle ABH, then that Triangle by ye 15th Prob: into a Square, whose side will be the line I, that done, by the 17 Prob: reduce the figure F, into a Square whose side shall be the line K, Then reduce the given Trapezia ABCD into into a longe Square like F, after this manner, Say by the 21th Prob: if K, give I, what the longer side of the figure F, answer the Line MN, for the length, Say againe, if K, give I, what the breadth of the sayd figure F, answer MO, for the breadth, wherof by the 15th Prob: make the longe Square MNPO, which shall be equall to the Trapezia ABCD, and like F, the figure given, Then for as much as the figures to be made like F, are to have proportion together as E to ff, Therfore by the 22th Prob: devide the Length of the longe Square MNOP, equall to the Trapezia given viz: MN, in Q into two parts in proportion as E to ff, viz: that as ~~E to ff, E~~ E to ff, so NQ the lesser part to QM the grater. That done, upon the Line MN discribe the Semicercle MRN, and upon
31.3. the point Q erect a perpendicular to cutt the Cymbe or Circomference in R Then draw the line
31.6. NR and MR, which shall be the Length of the figures to be made, unto which Lengths
8.6. MR and RN, finde there breadths by the 21th Prob: thus; Say if the Length of the given figure
4.6. F, give his breadth what MR answer his breadth which is the Line 12, then of the Line
Cor.19.6. MR and the Line 12 make the longe Square 400. Say againe, if the Length of the figure F, give his breadth, what RN, answer the Line 9. for the breadth of the longe Square whose Length is RN, Then of the Line RN. as the Length and the Line 9. as the breadth, make ye longe Square 270. which two longe Squares, viz: 400. and 270. are both like the given figure F, and together containe in Area, soe much as the given Trapezia ABCD, and yet the lesser figure 270. is in proportion to the greater 400, as the Line E, to the Line ff, which was required.

Now followeth a Com-
pleat Instruction of the
deuision of all right lined
figures, in diuers kindes, being
performed after a better way
then by any formar writer.

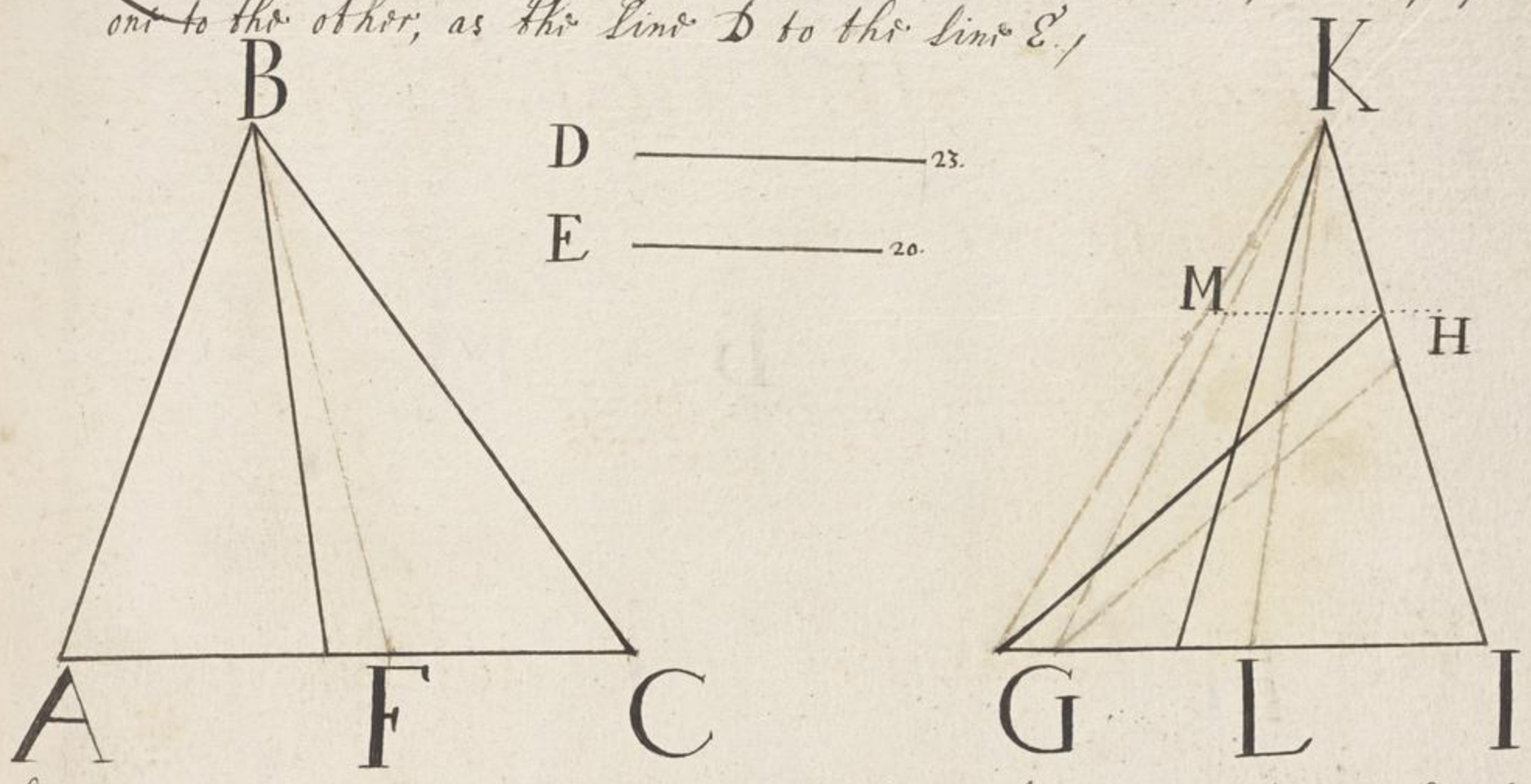
Very pleasant, and full of delight in
practise; Also, most profitable to all
Surueighers, or others that are desirus to make
any Inclosure.



Prob. 97.

To deuide a Triangle according to a proportion assigned, with a line drawn from an angle giuen.

Let ABC, be a Triangle giuen, to be deuided into two parts in proportion one to the other, as the line D to the line E.



By the 22th Prob: deuide the base AC, in H, as D to E, Then draw the line BH, so shall you deuide the Triangle into two parts, as D to E, required, for as D to E, so the Triangle ABH, to the Triangle BCH; &c.

Prob. 98.

To cut off from a Triangle, a part equall to a figure giuen, and to lay the part cut off towards any place appointed.

Let in the last diagram ABC, be a Triangle giuen from the which it is required to cut off so much as the Triangle FHI, containeth, and to lay the part cut off next C,

Increase the side IH, at length, thus by the Prob: reduce the Triangle FHI, into the Triangle KIL, whose Perpendicular may be of the length of the perpendicular of the giuen Triangle ABC, from B upon the base AC, That done; take the base IL, and set it from C to H, (because it is required to lay the part cut off next C,) Lastly, draw BH, so shall the Triangle BCH, be cut off, lying next C, and be equall to the giuen triangle FHI, which was required.

Hence also may be gathered, how to cut off from a figure giuen, any number of Acres, Roods, Poles &c. and to lay them towards a place appointed: For suppose a. r. p. 3. 1. 20. were to be cut off, and to be layd, first, make any triangle at pleasure, that may contayne 3. 1. 20. Which may by the same scale whereby the triangle ABC was layd downe. As let the triangle FHI, contayne 3. 1. 20. and then as before tought cut off from the Triangle giuen ABC, a part equall to the triangle FHI, as BHC, and lay it next C, so shall you cut off 3. 1. 20. which was required. The like is to be understood in all the examples following.

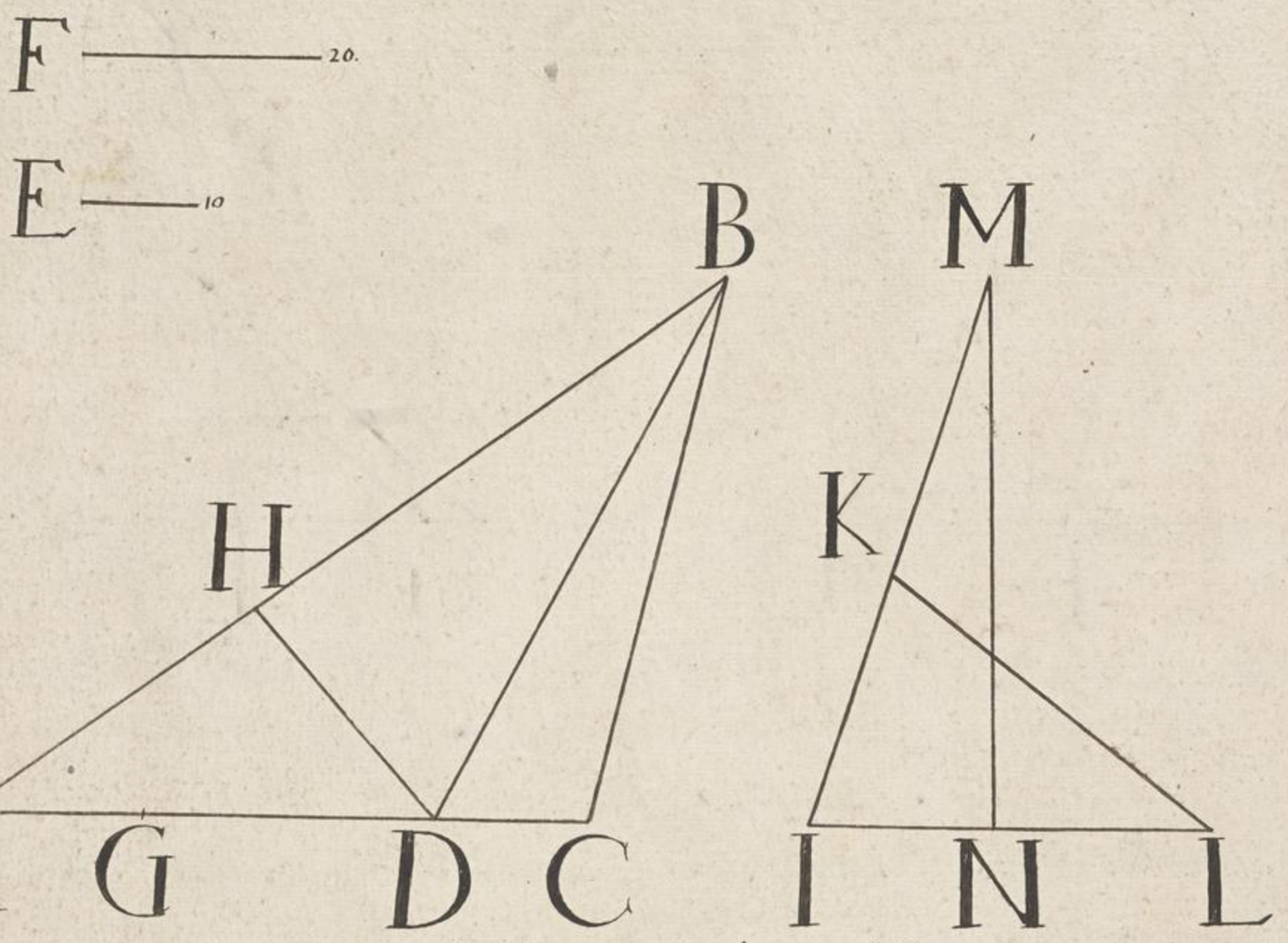
But here it will be necessary to shew the learner how to make a Triangle to containe a number of Acres, Roods, Poles &c.

As now to make the Triangle FHI, to containe a. r. p. 3. 1. 20. Therefore proceede thus: Bring the 3. Acres, and 1, Roode into roods by multiplying the 3. Acres by 4. and adding in the 1. roode, saying 4. times 3. is 12. and 1. is 13. so doth 3. Acres and 1. rood containe 13. rood: Which 13. bringe into poles by multiplying them by 40. and adde in the 20. poles. (because 40. poles make one Rood) so findes you 540. poles to be contained in a. r. p. 3. 1. 20. Now are you to make some kinde of triangle to contayne 540. poles, which is thus done, Double always your number of poles, viz: now 540. maketh 1080. then take for the base of your Triangle any number at pleasure, as 40. by which deuide 1080., (the double of the poles to be brought into a triangle:) and your quotient is 27. which shall be the perpendicular, to that Triangle, whose content shall be a. r. p. 3. 1. 20. and the base 40. as before. Therefore lay downe the base 40. any where, as in the former Diagram, from F, to I, then at the distance of 27. your quotient, draw a parralell thereunto as the pricked line MH. that done, take any point in that parralell as the point H, from whence draw lines to F, and I, the ends of the base, as FH, and HI, so shall you include the triangle FHI, which shall containe a. r. p. 3. 1. 20. as was required.

Prob 99.

To divide a triangle given into two parts in proportion according to two lines given, with a line drawne from a point in any side assigned.

Let ABC be a triangle given, and let D, be a point assigned in the side AC, from whence it is required to draw a line to divide the triangle into 2. parts, having proportion one to the other as the lines E and F, .



First divide the line or base AC, in G, as E, to F, by the 22th Prob: then draw from the opposite angle B, a line to the given point D, as BD, that done, by the point G, draw a parralell thereunto to cutt the side AB, in H, Lastly, draw the line DH, for shall you inclose the Triangle ADH, which shall be in proportion to the rest DCBH, as the line E, to the line F, which was required.

Prob. 100.

To cut of from a Triangle given, a part equall to a figure given, with a line drawne from a point in any side assigned.

Let in the last Diagram ABC, be a triangle given, and let D, be a point assigned, in the side AC, from whence it is required to draw a line to sume part of the side AB, as DH, to inclose a part equall to the triangle I, K L.

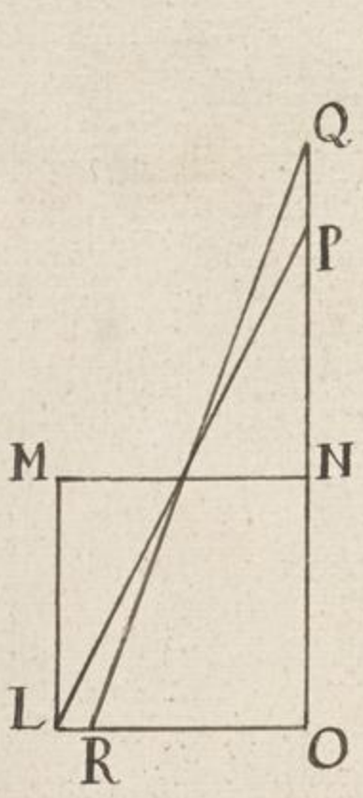
First; by the 47th Prob: bringe the Triangle I K L, into the triangle I M N, whose perpendicular may be all one with the perpendicular of the given Triangle ABC, That done, draw from the given point D, a line to
37. 1. 6. *the opposite angle B, as DB, then set the base of the Triangle I M N, viz: I N, on the base AC, from A, to G, and by G, draw a parralell to DB, to cut AB, in H, Lastly, draw the line D.H, so shall you cutt of the triangle ADH, equall to the figure given I K L, which was required.*

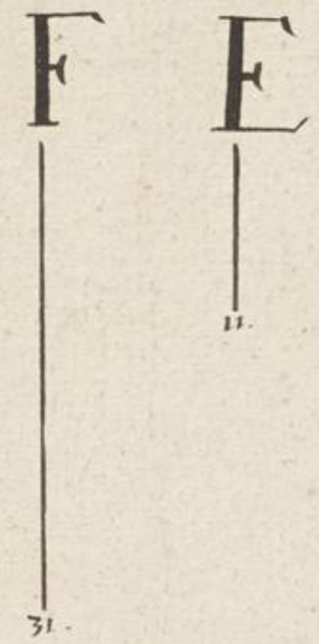
And the like worke for any number of Acres, Roodes, Poles, &c.

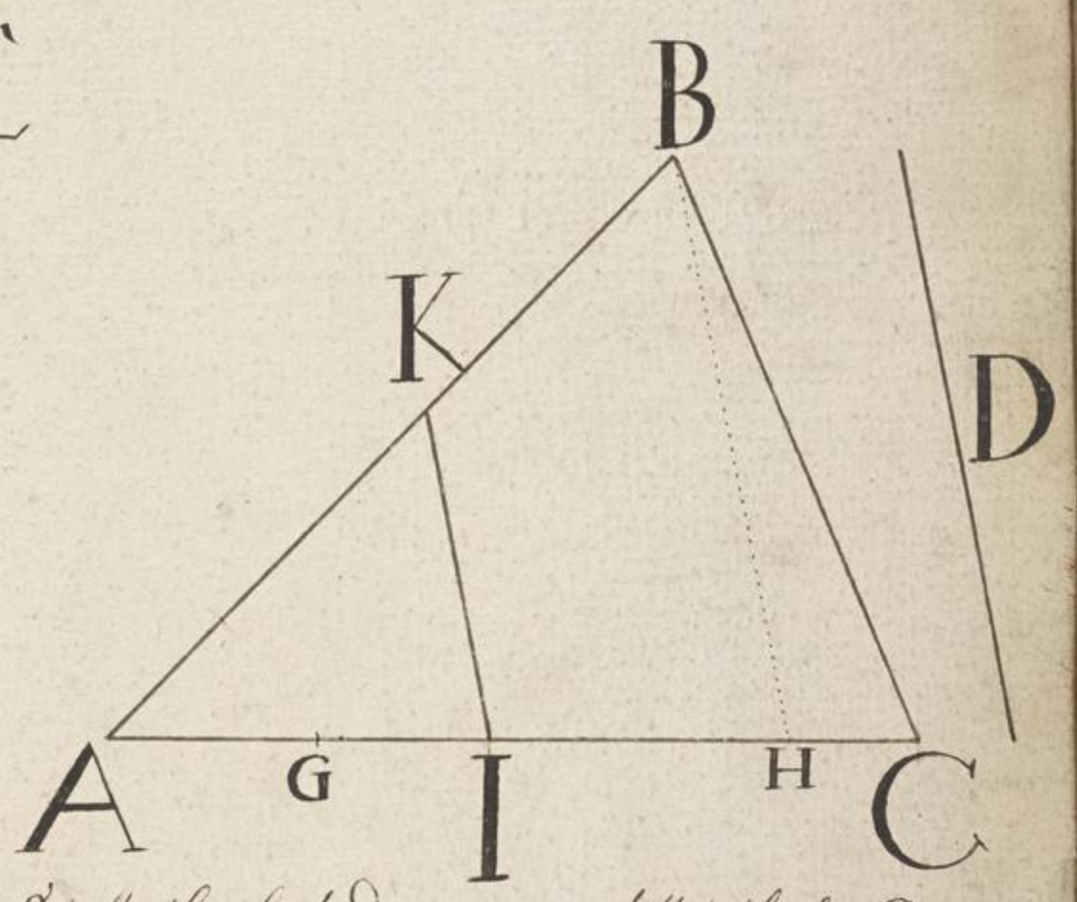
Prob. 103.

To Divide a triangle (with a parralell to a line given) according to any proportion assigned between two lines.

Let ABC, be a triangle and D, a line given, and it is required to divide the same into two parts with a parralell to D, in proportion one to the other, as y^e^ line E to the line F.







By the 22.th Prob: Divide the base AC, in G, as E to F, then by B, Draw a parralell to the line D, as y.^e^ pricked line BH to cut AC, in H, That done, betweene AG, and AH, finde a mean proportion by the
1.6 Cor. 19.6 29.th prob: as AI, then by the point I, draw a parralell to the given line D, as IK, so is cut of the Triangle AIK, which shall be in proportion to the rest CBKI, as E to F, which was required.

Prob. 104.

To cutt off from a triangle, a part equall to a figure given, with a parralell to a line assigned.

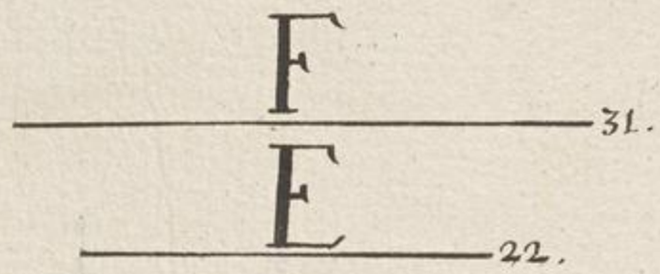
Let in the last Diagram ABC, be a Triangle given, and let it be required to cut of from it a part equall to the figure LMNO, with a parralell to the line D.

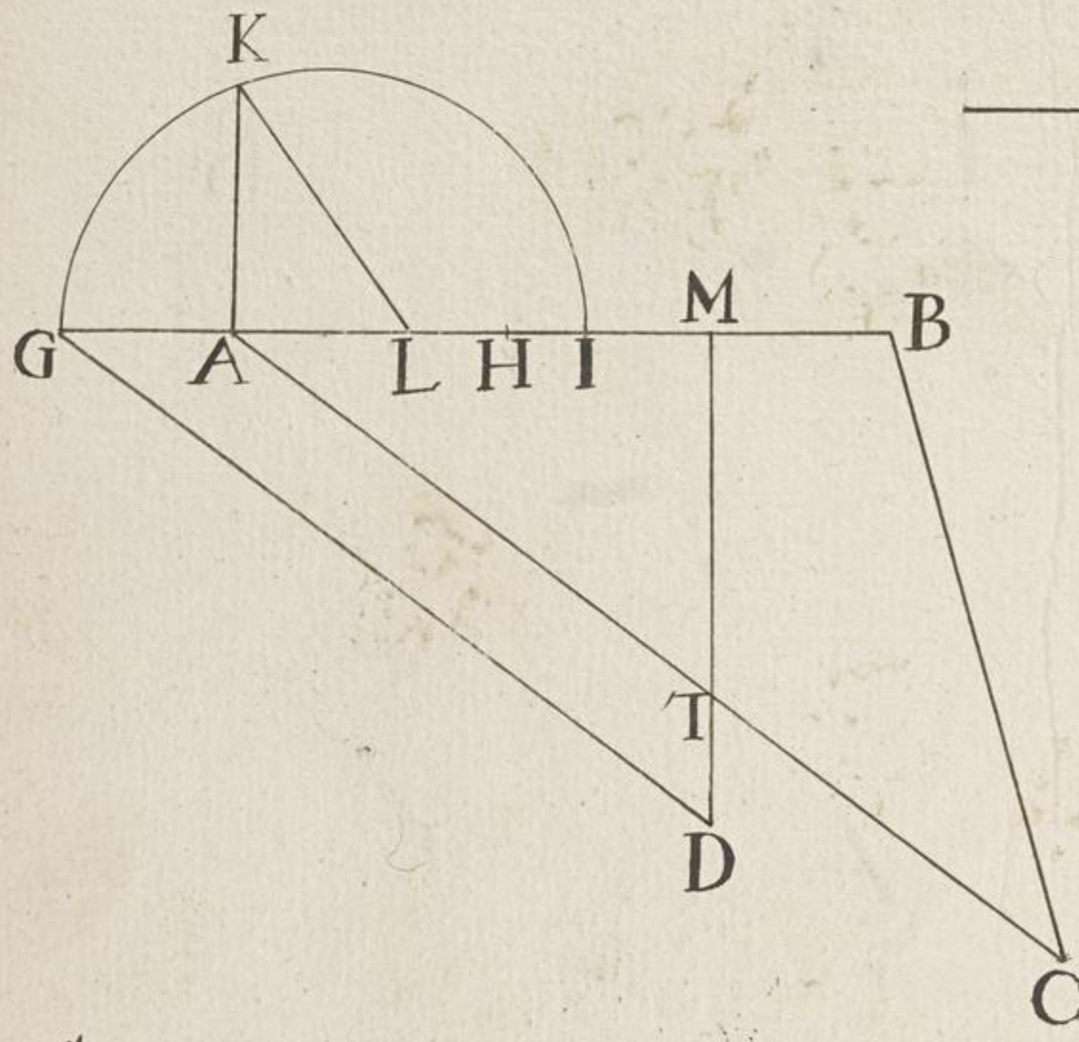
First from B, draw a parralell to the given line D, to cut the base AC, in H, then increase ye side of the Square OR, to P, that OP, may be just twice the side ON, and draw the line LP, so shall the triangle LOP, be equall to the figure given: Then reduce that triangle
37.1. 1.6 into the triangle OQR, whose perpendicular OQ, may be equall to the perpendicular of the
Cor. 19.6 triangle ABC, that done, take the base thereof; viz: OR, and set that upon the base AC, (of ye given triangle) from A to G, then by the 29.th Prob: finde a mean proportion betweene AG, and AH, as AI, and by the point I, Draw a parralell to the Line D, as IK, which shall cutt of the triangle AIK, equall to the figure given, as was required.

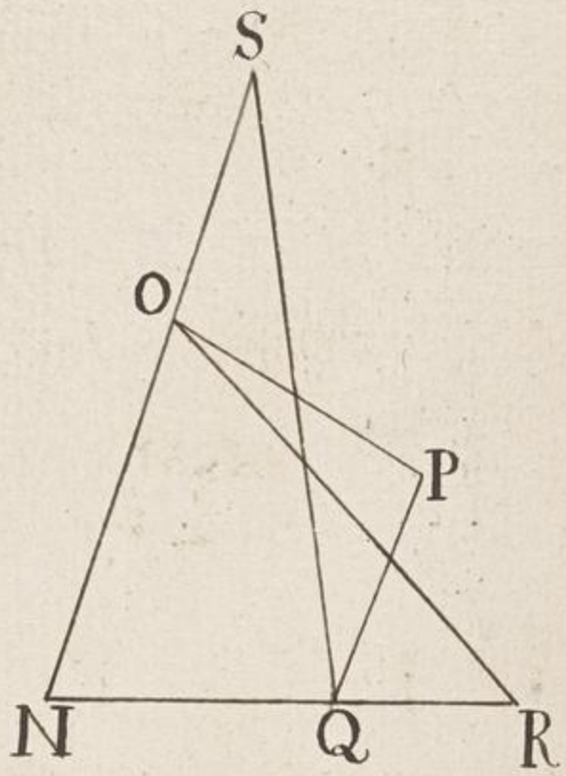
Prob. 105.

To divide a triangle into two parts, according to any proportion given, with a line drawne from a point assigned without ye. triangle.

Let ABC be a triangle given, and D a point without, from whence it is required to drawe a line to divide the triangle into two parts in proportion one to the other, as the line E, to the line F.







First increase the side AB, to F, then by the point D, draw a parraloll to CA, as DF, to cutt BA, beinge increased in F, That done, devide AB, in H, as E to F, that as E, to F, so AH, to HB, Then, by the 12.6 13.6 17.1 16.6 21th Prob: say if FD, give AC, what AH; answer AI, which set from A to I, That done, finde a mean and proportion betweene FA and AI, as AK, then finde devide alwaies AI, into two equall parts in L, and draw KL, which set from L, to M, Lastly, from the point D, to the point M, draw the line DM, so shall you cutt of the Triangle AMT, which shall be in proportion to the reste CBMT, as the line E, to the line F, which was required.

Prob. 106.

To cut of from a triangle a part equall to a figure given, with a line drawen from a point assigned without the Triangle.

Let in the last diagram ABC, be a triangle given, and D a point without, from the which it is required to draw a line to cutt of from the Triangle ABC, a part equall to the Trapezia NOPQ.

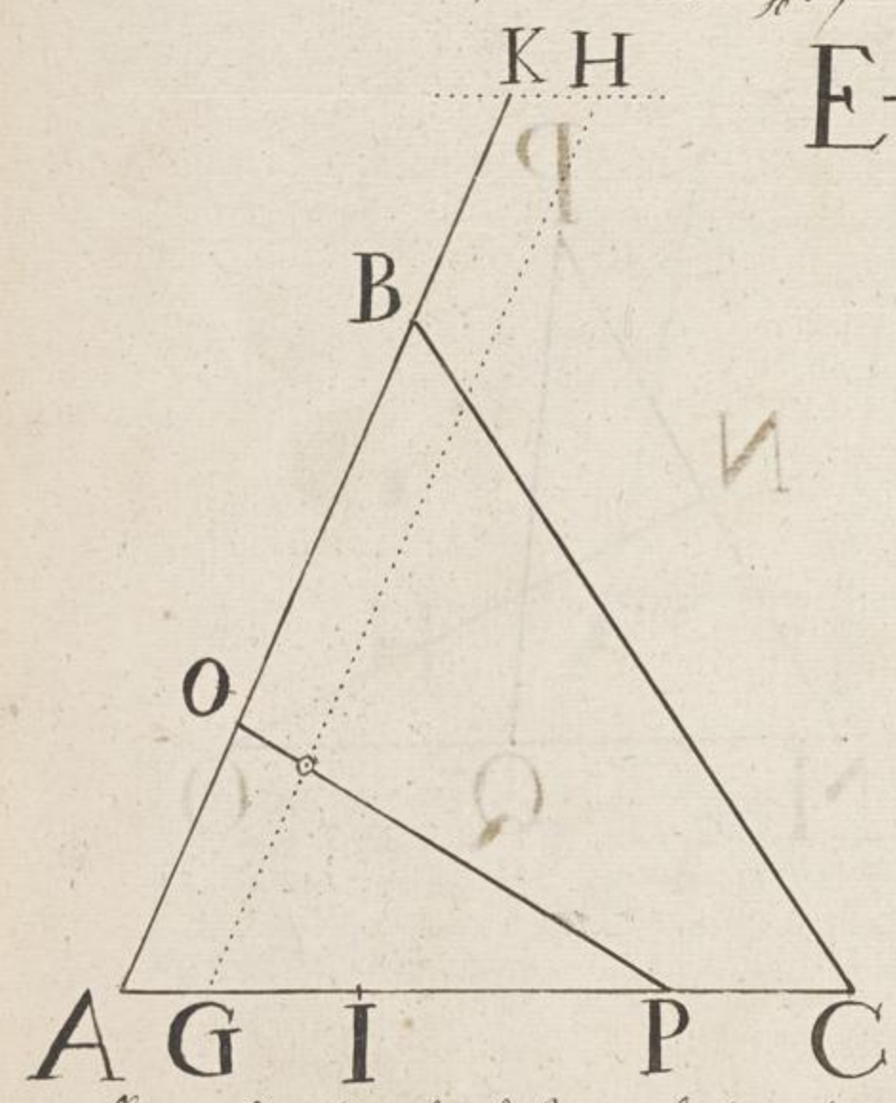
First increase BA, to F, then by the given point D, draw a parraloll to CA, as DF, to mette with BA, beinge increased in F, That done, by the 29.1 26.1 4.6 31.6 19th Prob: bringe the Trapezia into the Triangle NOR, Then that Triangle againe into the Triangle NSQ, whose perpendicular may be equall to the perpendicular of the given Triangle ABC, from C, upon ~~up~~ AB, (beinge increased) that done, take the base thereof viz: QN, and set it ~~from~~ on the base AB, (of your triangle given) viz: from A to H, Then say by the 21th Prob: if FD, give AC, what AH; answer AI, which set from A, to I, that done; finde a mean proportion betweene AF, and AI, as AK, and devide always the line AI, into two equall parts in L, then draw KL, which set from L to M, Lastly, from the given point D, to M, draw the line DM, which cutteth of the Triangle ATM, equall to NOPQ, the Trapezia given as wee required

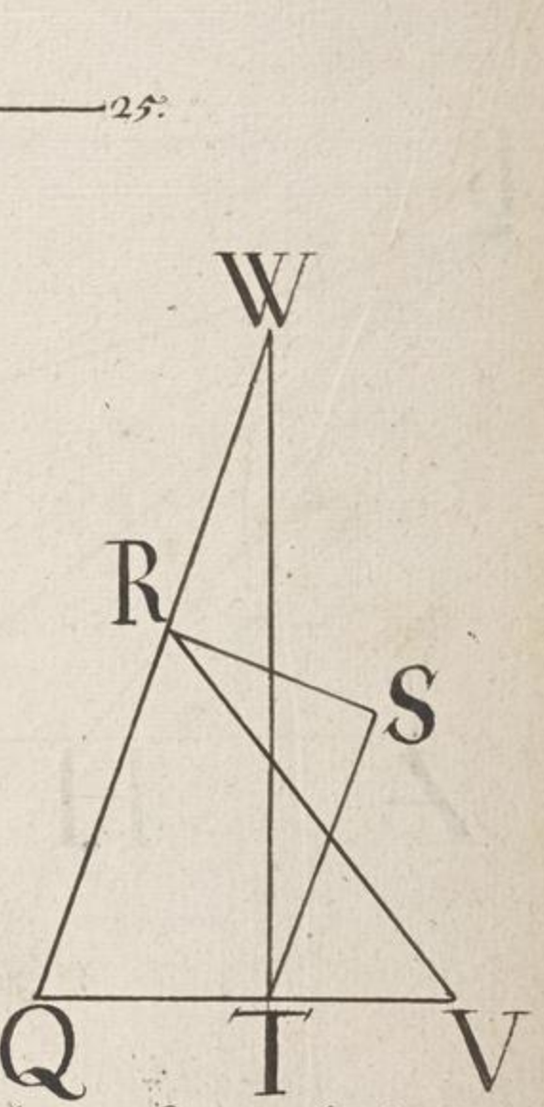
37.1 29.1 26.1 4.6 31.6

Prob. 107.

Through a giuen point within a triangle to draw a line to deuide ye triangle according to any (possible proportion) betweene two lines giuen.

Let ABC be a triangle giuen, and D, a point within, through the which it is required to drawe a line to deuide ye triangle into two parts in proportion one to the other as the line E, to the line F.





First consider through which sides the line of partition OP, must passe; which will be AB, and AC, then by the point D, draw a parralell to AB, as FH, to cutt the base AC, in F, that done, by the 22th prob: deuide the base AC in I, as E, to F, Then say by the 21, Prob: if AF, (that part of the base cut by the parralell HF, adioyninge to that side, unto which the parralell was drawen, viz AB) giue the halfe perpendicular from B, upon the base AC, what AI; answer, a line, at the distance whereof, draw a parralell to the base AC, as the prickt line KH, to cut the side AB, if it may, if not, increase it till it meete with that parralell in K, Then note where ye two parralells viz. FH, and KH, mette; which is in the point H, That done; take by the 47 Prob: the square of FD, from the square of DH, rest in the right angled triangle LMN, the square of MN, which take, and set upon the side AB, beinge increased from K, to O, Lastly, Lay your rular by the points O, and D, and draw the line ODP, so shall you cutt of the triangle AOP, which shall haue proportion to the part remayninge OBCP, as the line E, to ye line F, which was required.

29.1
26.1
4.6
31.6

Prob. 108.

To cutt of a triangle with a line drawen through a point within, (if it be possible) a part equall to a figure giuen.

Let ABC in the last diagram, be a triangle giuen, from whence it is required to cutt of so much as the figure QRST, with a line drawne through the point D, within.

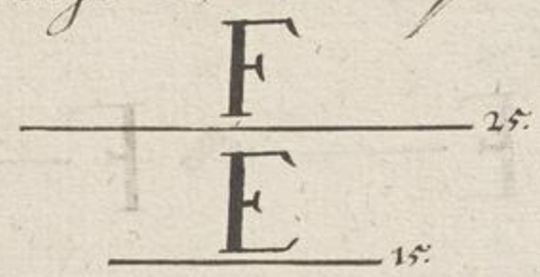
First bringe the figure giuen into a triangle by the 19th Prob:, as into the Triangle QRV, then, that triangle into the triangle QTW, whose perpendicular from W, may be equall to the perpendicular from B, upon the base AC, of ye giuen triangle, so is the base of that triangle QTW, the line QT, then seinge so much as the triangle QTW, is to be cut of with a line drawn through the point D, therfore consider through which sides of the triangle ABC, the line of partition OP, shall passe, which will be ye sides AB, and AC, therfore by D, draw a parralell to AB, as FH, that done; set the base of the triangle QTW, (equall to your figure giuen to be cut of) from A, to I, (upon the base AC) Then say by the 21th Prob: if AF, (the part of the base cut by the parralell HF, adioyninge to the side AB, whereunto that parralell was drawne) giue the halfe perpendicular from B, upon AC, what AI; answer, a line, at the distance where of, draw a parralell to the base AC, as the pricked line KH, to cut the side AB, if it may, and if not, increase it till it doe meete with that parralell, then note where those two parralells mette viz. FH, and KH, which is in H, that done, take the square of FD, from the square of DH, so rests the line MN, (in the right angled triangle LMN,) for the side of a square equall to the remaynder, which line MN, take, and set from K, to O, upon the side AB, beinge increased. Lastly, Lay your rular upon the points OD, and draw the line ODP, which cutteth of the triangle AOP, equall to QRST, the figure giuen, which was required.

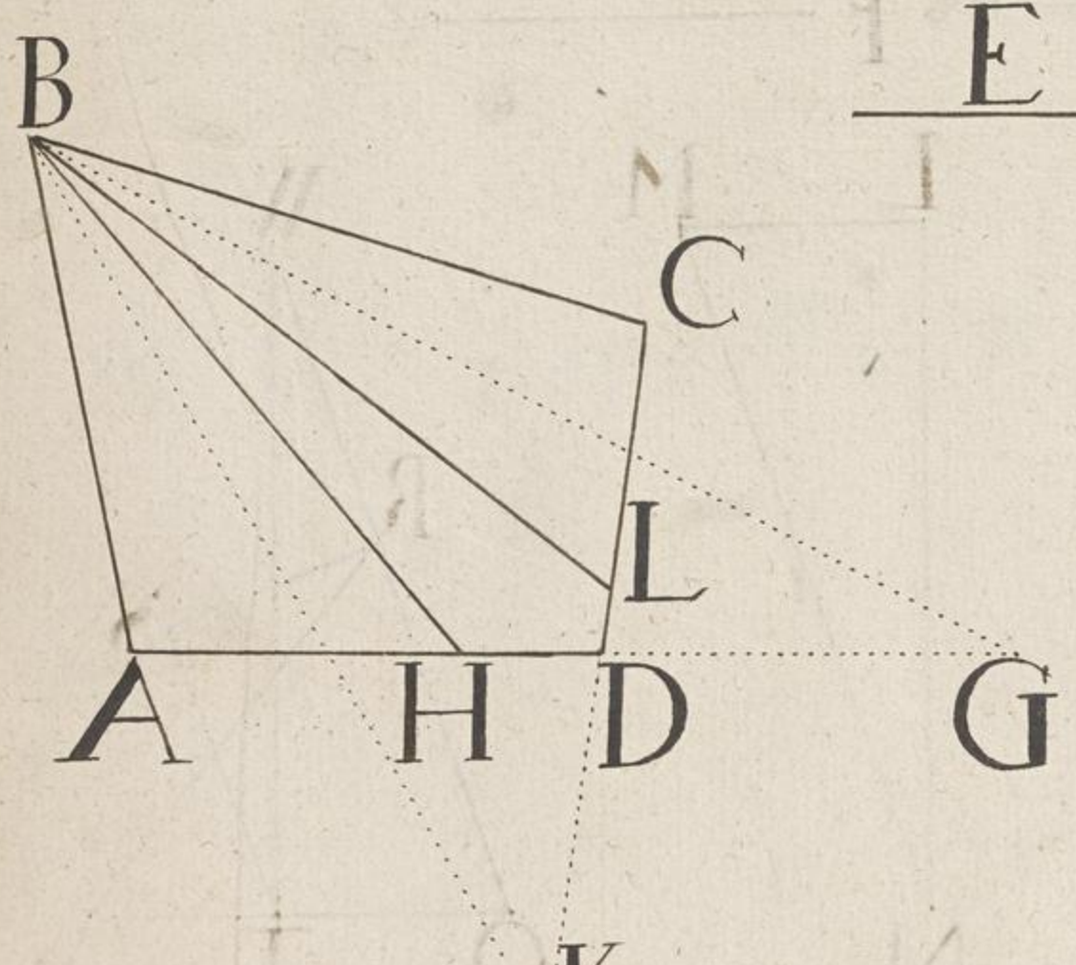
37.1
29.1
26.1
4.6
31.6

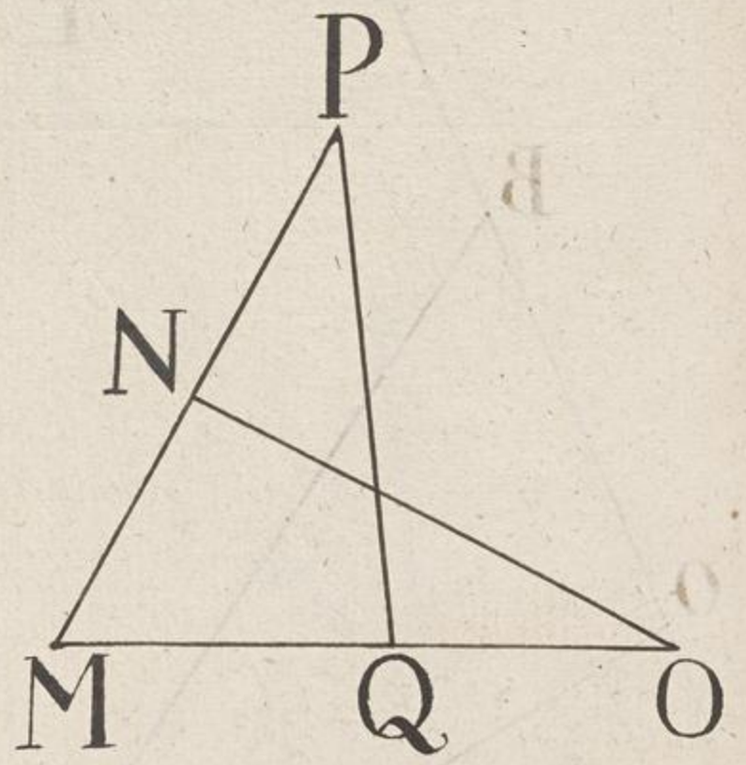
Prob. 109.

To Devide a Trapezia given, according to any proportion betweene two Lines with a Line drawne from an angle assigned, and to lay the part cut off towards a place appointed.

Let ABCD be a Trapezia given, the which is to be devided into two parts, as E, to FF, with a Line drawn from the angle B, and to lay the lesser part next A,







Reduce the Trapezia into ye triangle ABC, by the 49th Prob: whose base is the Line AG, bringe increased to G, which AG, by the 22th Prob: devide in H, as E to FF, then draw the line BH, so shall you cut of the triangle ABH, which shall be in proportion to ye part remayninge BCDH, as the line E, to the Line FF; as was required.

37.1
10.6
1.6

But if the gratter part weare required to be left towards A, then the Line of partition drawne from B, will light upon the side CD, and then must you reduce your Trapezia into a triangle making CD, (increased the base) therfore by the 49th Prob: find the point K, so is CK, the whole base, then devide CK, in L as E to FF, by the 22th Prob: and draw the line BL, so shall BCL, the lesser part by next C, and BADL, the grater next A, and be in proportion one to the other, as E to FF, which was required.

And if it weare to draw a line from the angle C, then the side AB, must have bine increased, and the Trapezia brought into a Triangle by the 49th Prob: whose base must be the side BA, increased and then worke as before tought.

Prob. 110.

To from a Trapezia given, to cut of a part equall to a figure given, with a line comming from an angle assigned and to lay the part cut of towards a place appointed.

Let in the last Diagram ABCD, be a Trapezia given, from whence it is required to cut of so much as the figure M N O, and to lay the part out of next A,

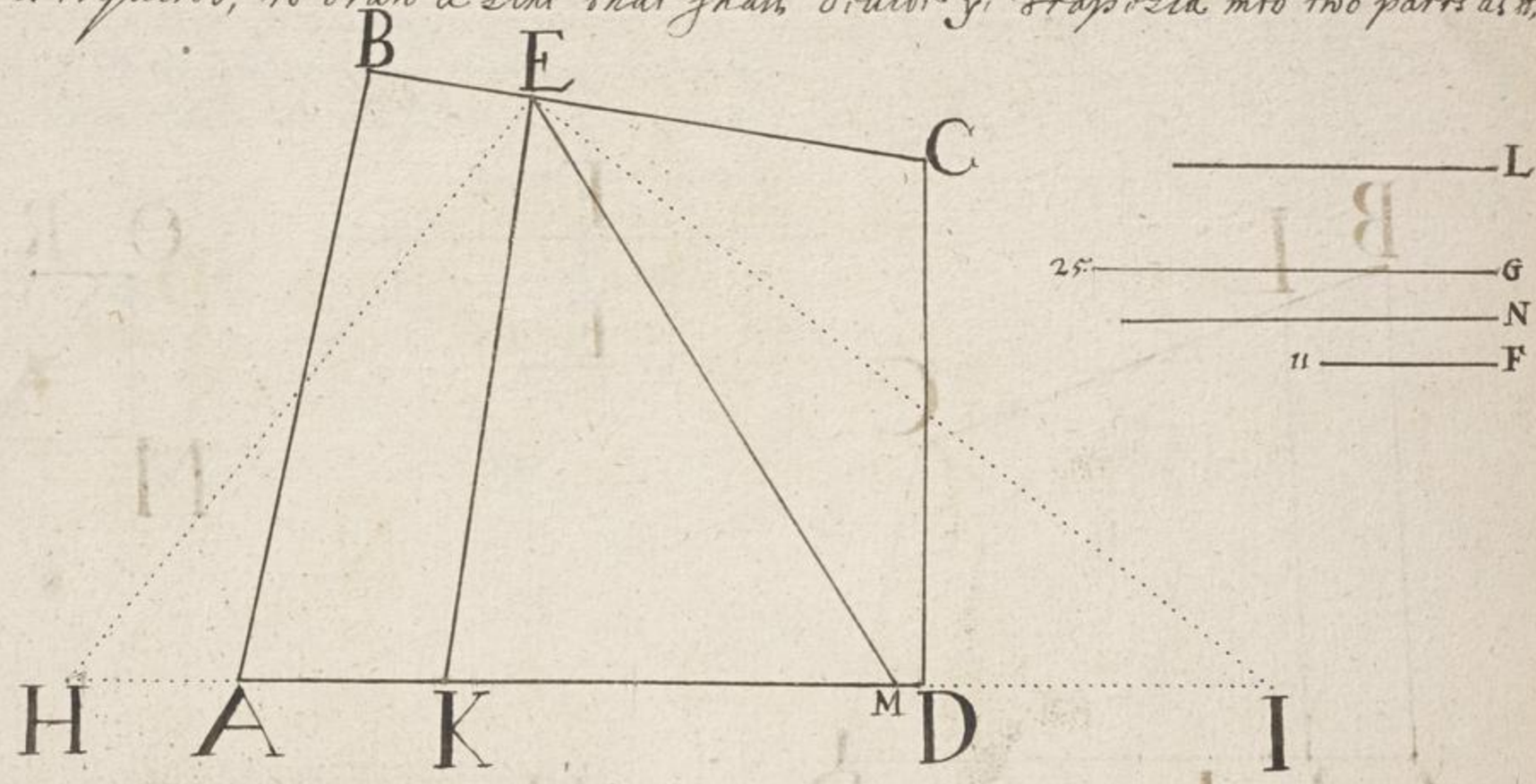
By the 44 Prob: reduce the triangle M N O, into the Triangle M P Q, whose perpendicular may be equall to the perpendicular of the triangle ABG, (from B, upon the base AG,) then take base of that triangle viz: Q M, and set it from A to H, and draw the Line BH, so shall the triangle ABH, be cut of with a line drawne from the angle B, and be Layd next A, whose content shall be equall to the given figure M N O, which was required.

37.1
1.6

Prob. III.

To divide a Trapezia into two parts, according to any proportion required, with a line drawn from a point assigned in any of his sides.

Let ABCD, be a Trapezia given, and let E, be a point assigned in the side BC, from the which it is required, to draw a line that shall divide ye Trapezia into two parts as H, to I.



first increase the base both wayes to H, and to I, then from the point E, by the 19 Prob: draw the lines EH, and EI, and draw the trapezia into the triangle HEI, whose base shall be HI, ye which divide in K, by the 22d Prob: as H to I, Lastly, draw the line EK, so shall you divide ye given Trapezia ABCD, with a line drawn from the point E, into two parts, viz: ABEK and ECDK, in proportion one to the other, as the line H to the line I, which was required.

Prob: II2.

To cut of from a Trapezia, with a line drawn from a point in any of his sides, a part equall to a figure given.

Let in the last diagram ABCD, be a Trapezia given, from whence it is required to cut of so much as a square made of the line L. containeth.

first, by the 19. Prob: bringe the Trapezia into the triangle; HEI, Then reduce the square whose side is L, into a triangle, whose perpendicular may be equall to the perpendicular of the triangle HEI, (from E upon the base HI,) so shall the base of that triangle come to be the line N, which take & set from H to K, and draw EK, So shall you cut of the Trapezia ABEK, equall to that square whose side is the given line L, which was required.

And if you would have the lesser part cut of to be next D, then set the line N, from I, to M and draw EM, so shall you cut of the part ECDM, next D, which shall be in proportion to the rest ABEM, as H to I, required.

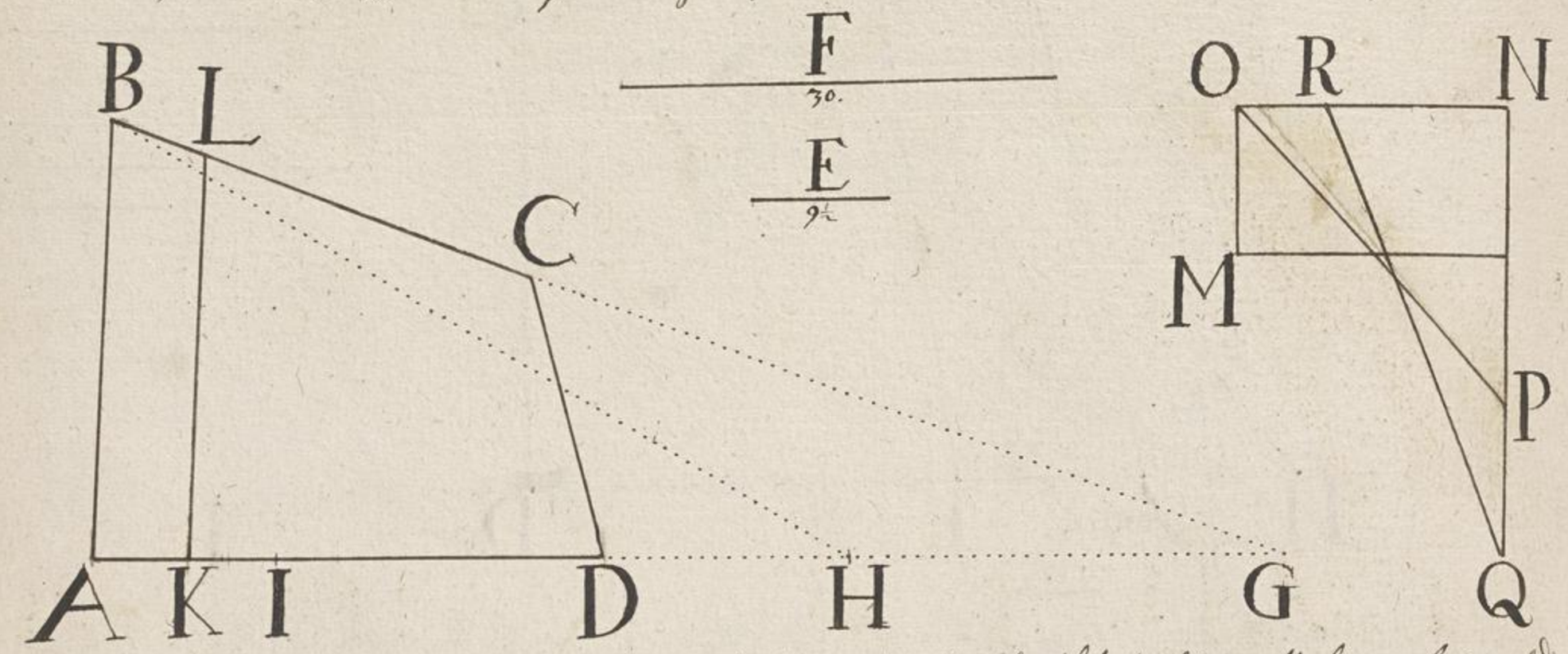
Yet must I here in advise you one things, that if you intend to lay the part cut of next A, that then there is noe necessity, to reduce the whole Trapezia into a triangle; as to make the triangle HEI; but it may suffice to draw the line EH, by the 20 Prob: to take in so much as it cutt of, and then reduce your figure given to be cut of, into such a triangle whose perpendicular may be equall to the perpendicular from E, upon AD, and then the base of that reduced triangle beinge set from H to K, and the line EK beinge drawne, it performeth the demande.

But this may be only done, when a figure given, or a summe of Acres is required to be cut of, but not when it is required, to divide the plot into two parts in proportion, to two lines given, as the III. Prob: requires, for then it is of necessity to bringe the whole Trapezia into a triangle, &c.

Prob. 113.

To devide a Trapezia given, into two parts, with a parralell to one of his sides, in such proportion one to the other, as two lines given, and to lay the part required towards a place assigned.

Let ABCD, be a Trapezia given, to be devided into two parts, with a parralell to the side AB, in such sort, as the lesser part may have proportion to the grater, as the line E, to the line F, and to lay the biger part next D, and the lesser next A.



first, consider through which two sides the line of partition KL must passe; (for those two sides must alwayes be increased till they meete in G, That done, by the 29th Prob:, reduce the trapezia ABCD, into the triangle ABH, whose base is AH, or which is better, having found the point H, it sufficeth: and there is noe need to draw the line BH, for it doth but obscure the worke, and is better out then in, with then, having the point H, The base of that triangle equall to the trapezia shall be AH; which devide by the 22th Prob: in 3, as E to F, viz:
37·1 10·6 1·6 13·6 that as E, to F, so AI, the lesser part next A (because the lesser part next A is to be layd next A) to IH, the grater part. That done, betweene GI, and IA find a meane proportion, as IK; Lastly, by the point K, draw a parralell to the side AB, as KL, so shall you cut of the lesser part ABLK, (next A) which shall have proportion to the grater part KLCD, next D, as the Line E to the Line F, as was required.

But if the part required to be cut of, had beene with a parralell to AD, then the line of partition would passe through the sides AB, and DC, which must have beene increased till they meete, and then proceede in all points as before.

Prob. 114.

To cut of from a Trapizia, with a parralell to one of his sides, a part equall to a figure given, and to lay the part cut of, towards a place appointed.

Let in the last diagram MN, be a longe square given, to be cut of, from the Trapezia ABCD, with a parralell to the side AB, and to lay the the part cutt of next A,

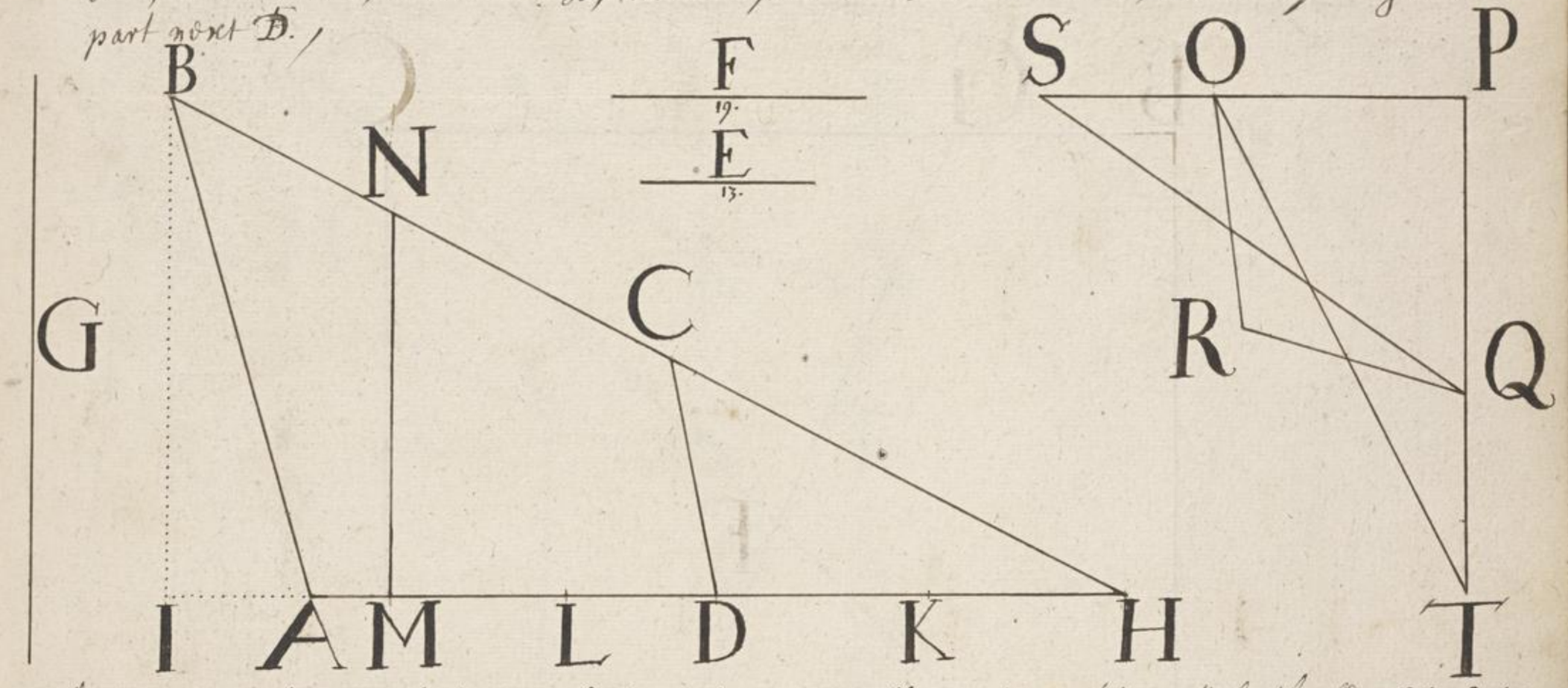
first as before, consider through which sides the line of partition shall passe, which are BC, and AD, which increase till the meete in G, That done, reduce the longe square MN, into the triangle ORP, and that triangle againe into the triangle RNQ, (whose perpendicular NQ, may be equall to the perpendicular
37·1 13·6 1·6 from B upon AH,) so shall thy base be the line NR, which take, and set from A to 3, (because it is to be layd next A) That done, betweene GI, and IA, finde a meane proportion as IK, Lastly, from K, draw a parralell to the side AB, as KL, so shall you cutt of the part ABLK, equall to MN, the longe square given, which was required.

And if the part cut of equall to the longe square MN, should have beene layd next D, then you must first have found the point H, and then have set the distance NR, from H towards A and for hand proceeded as before, but seeinge it is to lie next A, there is noe neede at all, to find the point H, but only proceede as before taught, &c.

Prob. 115.

To devide a trapezia into two parts, accordinge to any proportion betweene two Lines, with a parralell to a Line giuen, and to Laye ye part required towards a place assigned.

Let ABCD, be a Trapezia giuen, to be devided into two parts in proportion one to ye other, as the Line E, to the Line H, with a parralell to the Line F, and to Lay the grater part next D.



First, consider through which sides the Line of partition shall passe, which will be the sides AD, and BC, which increase till the meete in H, then by B. draw a parralell to ye giuen Line F, as BI, to meete with ye base DA, (being increased) in I, that done, by the 19th Prob: find the point K, unto which point a Line drawen from B. should include a triangle equall to the trapezia giuen, so as AK, the whole base of that triangle, which deuided in L, as E, to H, and Lay the bigger part KL, next D, (because it is so required) that done, betweene HL, and HI, finde a meane proportion, as HM, Lastly, by the point M, draw a parralell to the giuen Line F, as MN, so shall you deuide the Trapezia ABCD into two parts, with a parralell to the Line F, and Lay the bigger part DCNM, next D, and the lesser part MNBA, next A as was required.

37.1 1.6 Cor.19.6

Prob. 116.

To cut off from a Trapezia a part equall to a figure giuen, with a parralell to a Line drawen by chance; and to Lay the part cut off towards a place assigned.

Let in the last Diagram, ABCD, be a Trapezia giuen, from whence it is required, to cut off so much as ye figure OPQR, with a parralell to the Line F, and to Lay the part cutt off next A,

First consider, through which sides, MN, the Line of partition shall passe; which are AD, and BC, which increase till the meete in H, that done, reduce OPQR, your figure giuen to be cut off, into the Triangle QPS, by the 49th Prob: & againe that Triangle into the Triangle OPT, by the 40th Prob: whose perpendicular PT, may be equall, to the perpendicular from B, upon HA, (being increased) so shall his base be PO, which take, and set upon the base AK, from A towards K, (because the part cut off must lie next A,) and doth in L, then draw from B, a parralell, to the giuen Line F, to cut the base HA, (being increased) in I, as the pricked line BI, that done, finde a meane proportion betwee HL, and HI, as HM Lastly, by M, draw a parralell to the giuen Line F, as MN, so shall you cut off next A, the part ABNM, equall to the giuen figure OPQR, required.

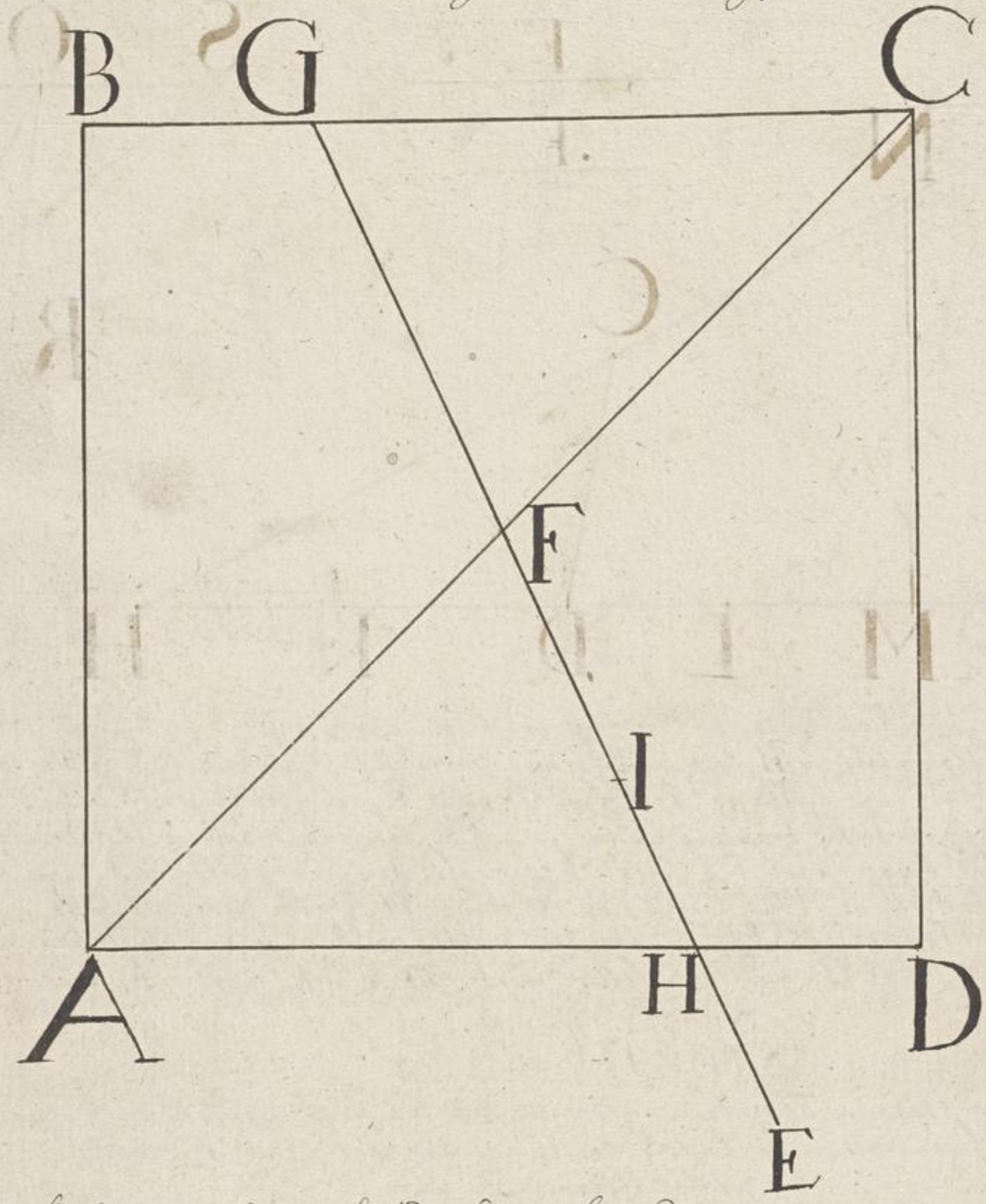
37.1 1.6 Cor.19.6

Note, that what hath beene said of a Trapezia, conserning the deuision, according to any proportion betweene two lines, or cutting off a part equall to a figure giuen, either with a line drawne from any angle, from a point in one of the sides, or with a parralell to a line giuen, that the same may also be done to a square, long square, Rombus, or Romboides, being likewise figures of foure sides, &c.

Prob. 117.

To Divide a Square into two equall parts, with a Line drawne from a point without the Square.

Let ABCD, be a Square given, and Let E be a point without from whence it is required to drawe a Line, which shall Devide the Square into two equall parts.



First, drawe the Diagonall AC, which devide in the midst in H, Then Layinge your Rular by the points E and H, drawe the Line EH I H F, which shall devide the Square into two equall parts, viz: ABFH, and FCDH, both equall one to the other, with a Line drawne from the point E, as was required.

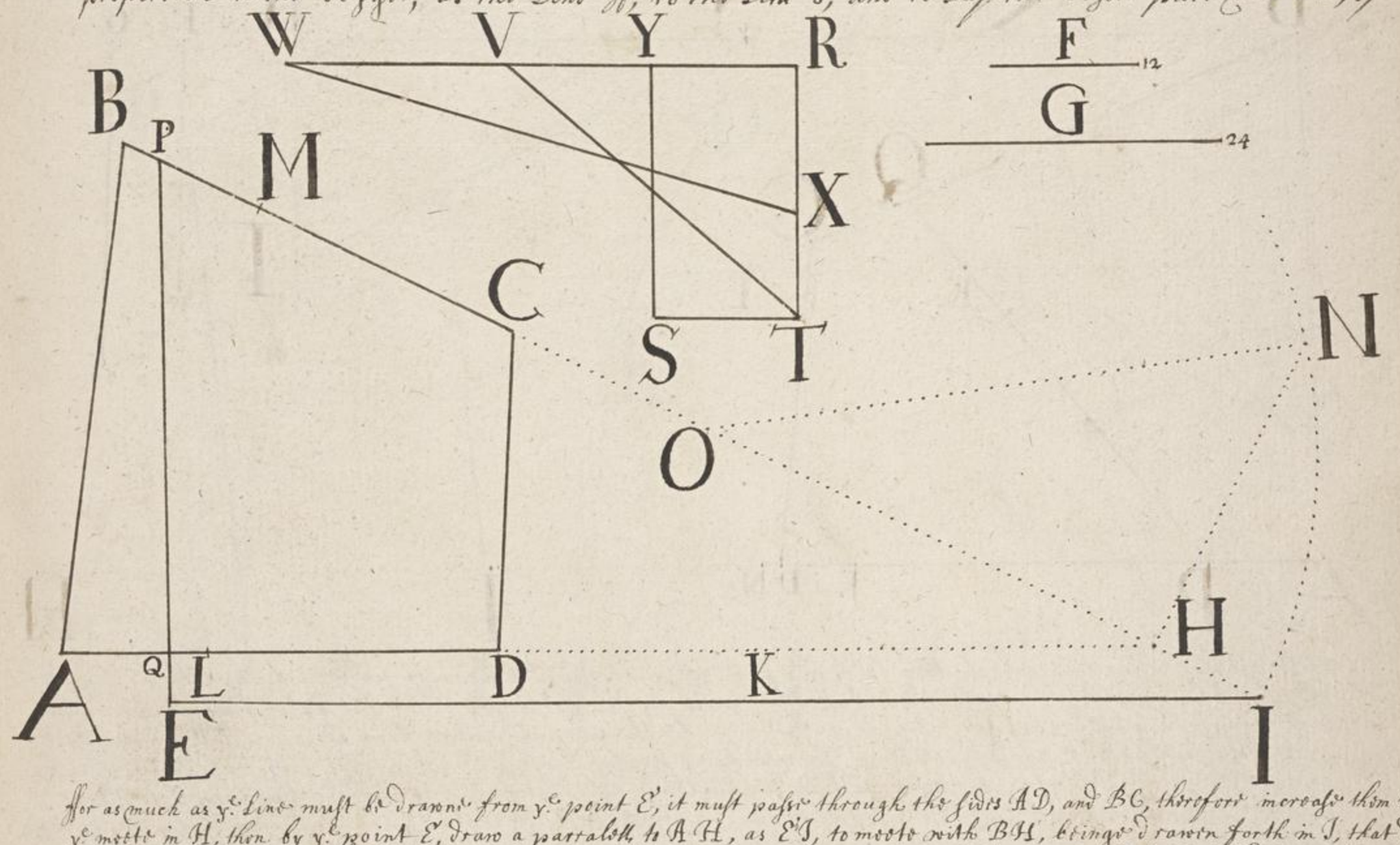
Note also, that if the point had beene in the side, or within the Square, as in H, or I, that it is done in the same manner.

The like may be done to a longe Square, a Rombus, or a Romboides.

Prob. 110.

To divide a Trapezia according to any proportion given, with a line drawn from a point without the Trapezia, and to lay the part desired, towards a place appointed.

Let ABCD, be a Trapezia given, and Let E, be a point without, from whence a line is to be drawn, to divide the Trapezia into two parts, so that the lesser part may have proportion to the bigger, as the line F, to the line G, and to lay the lesser part next A,



for as much as y^e line must be drawn from y^e point E, it must passe through the sides AD, and BC, therefore increase them till ye meete in H, then by ye point E, draw a parralell to AH, as EI, to meete with BH, being drawn forth in I, that done, finde ye point K, by ye 19th Prob: so is AK, the base of a triangle equall to ye Trapezia, and ye shortest distance from B, to AH, the perpendicular, then divide AK in L, as F, to G, (and because the lesser part cutt of, is to lie next A,) therefore set the lesser part of ye base so divided from A to L, That done, say by the 21 prob: if I, E, give H L, what H B, answer H M, then finde a meane proportion betweene IH, and HM, as HN, that done, divide always HM into two equall parts in O, and draw the line ON, which set from O to P, Lastly, from ye point E, to ye point P, draw the line EP, so shall you divide the Trapezia into two partes, and ye Lesser part ABPQ, to lie next A, and to have proportion to the grater part PCDQ, as the line F, to the line G, which was required.

Prob. 119.

To cut of from a Trapezia, a part equall to a figure given, with a Line drawne from a point assigned without; and to lay the part cutt of towards a place appointed.

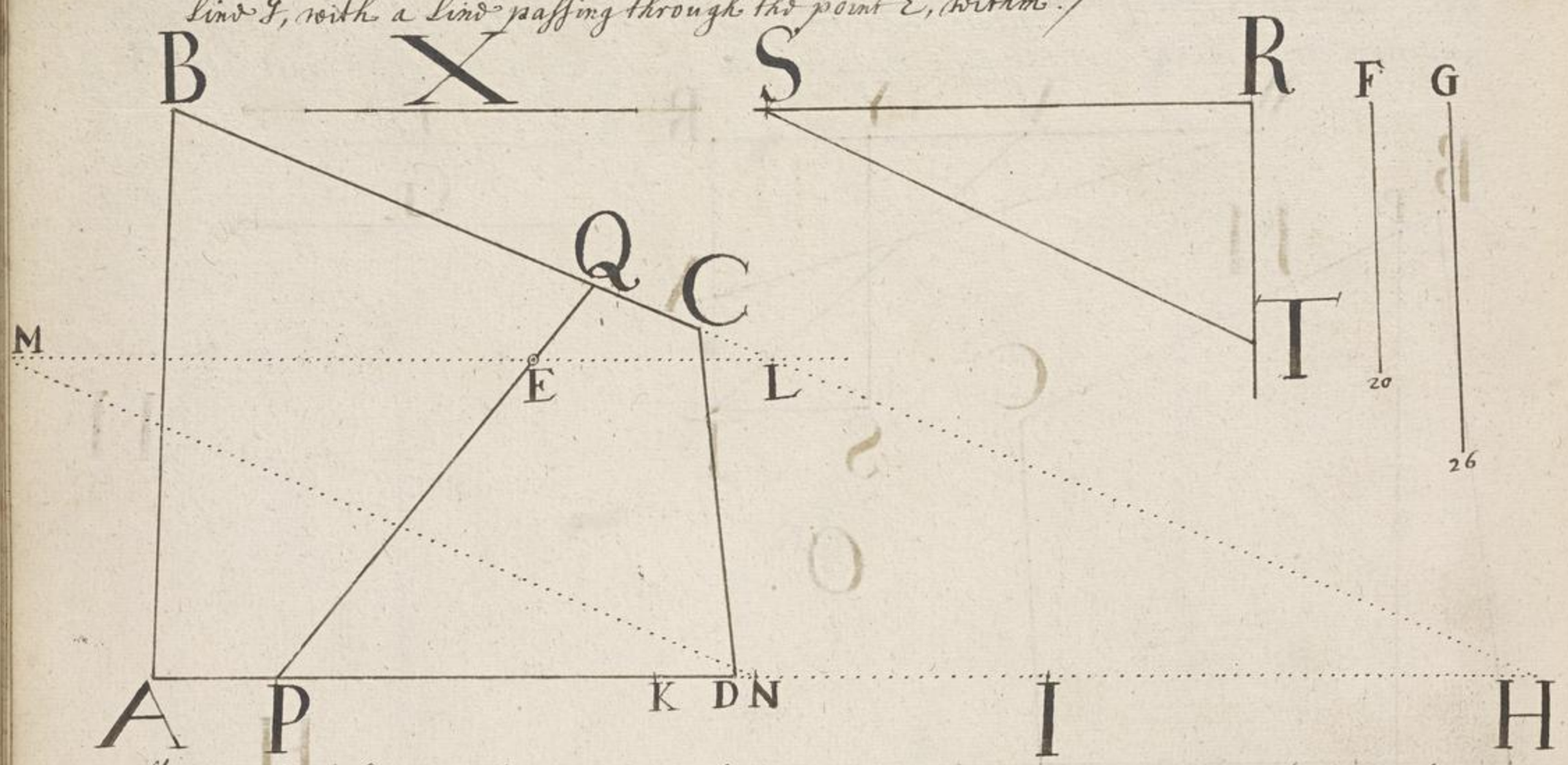
Let ABCD, be a Trapezia, and E a point given, from whence it is required, to draw a Line to cut of so much as the Longe Iguare RS, and to lay ye part cut of next A,

First consider, through what sides of the Trapezia the line of partition EQP, must passe; which may easily appeare to be the sides AD, and BC, the which increase till the meete in H; That done, by the point E, draw a parralell AH, to cut BC, being drawn forth in I, as before; then bringe your Longe Iguare given to be cut of into the triangle TRV, and againe, that triangle into the triangle RWX, whose perpendicular WR, may be equall to a perpendicular from B, (in ye Trapezia) upon the base AD, in which Triangle WRX, the side RX, is the base, and RW the perpendicular; which base take; and set from A to L, upon the base AD, (because the part cut of is required to be Layd next A,) Then say by the 21th Prob: if I E, give H L, what H B, answer H M, and then to finde the point P, proceede altogether, as in the last Problome was taught, for there is no difference in the worke; then draw EP, so shall you cut of the part ABPQ, equall to the given Longe Iguare RTSV, with a Line drawn from the point E, as was required.

Prob. 120.

To divide a Trapezia into two parts, (according to any possible proportion given,) with a line drawn through a point within.

Let ABCD, be a Trapezia given also let E, be a point within, and it is required to devide the Trapezia, into two parts in proportion one to the other, as the line H, to y^e line F, with a line passing through the point E, within.



First consider through which two sides the line of partition P E Q must passe; which will be y^e sides A D, and B C, therefore increase them till the meete in H, that done, finde the base of a triangle equall to ye Trapezia given, whose perpendicular may be the perpendicular from B, upon A D, by the 49 Prob: which base will be A I, which devide in K, according to your lines given, viz: that as H, to F, so I K, to K A, 37.1
then by the point E, draw a parralell to A D, as L M, that done, let fall a perpendicular from E, to A D, or 29.6
take the shortest distance from E, to A D, then say, by the 21. Prob: if that perpendicular or distance give the 12.6
perpendicular from B, upon A D, what ye halfe of H K, answer H N, which set from H, to N, by the 17.1
which point N, draw a parralell, to H B, as N M, to cutt L M, in M, then take the square of E L, from ye 31.6
square of E M, by the 47th Prob: the rest (which in the right angled triangle E R S,) is R S, set from R, to P, then by P, and ye point E, draw ye line P E Q, so shall you devide the Trapezia into two parts, with a line drawn through the point E, viz: Q C D P, the lesser, and Q B A P the bigger part, and in such sort that ye lesser shall have proportion to ye greater, as E, to H which was required.

Prob. 121.

To cut of from a Trapezia, with a line drawn through a given point within, (a possible part) equall to a figure given.

Let in ye Last diagram A B C D, be a Trapezia, and E, a point given, and it is required to draw a line through ye point E, which shall cut of a part equall to ye square, whose side is ye line X,

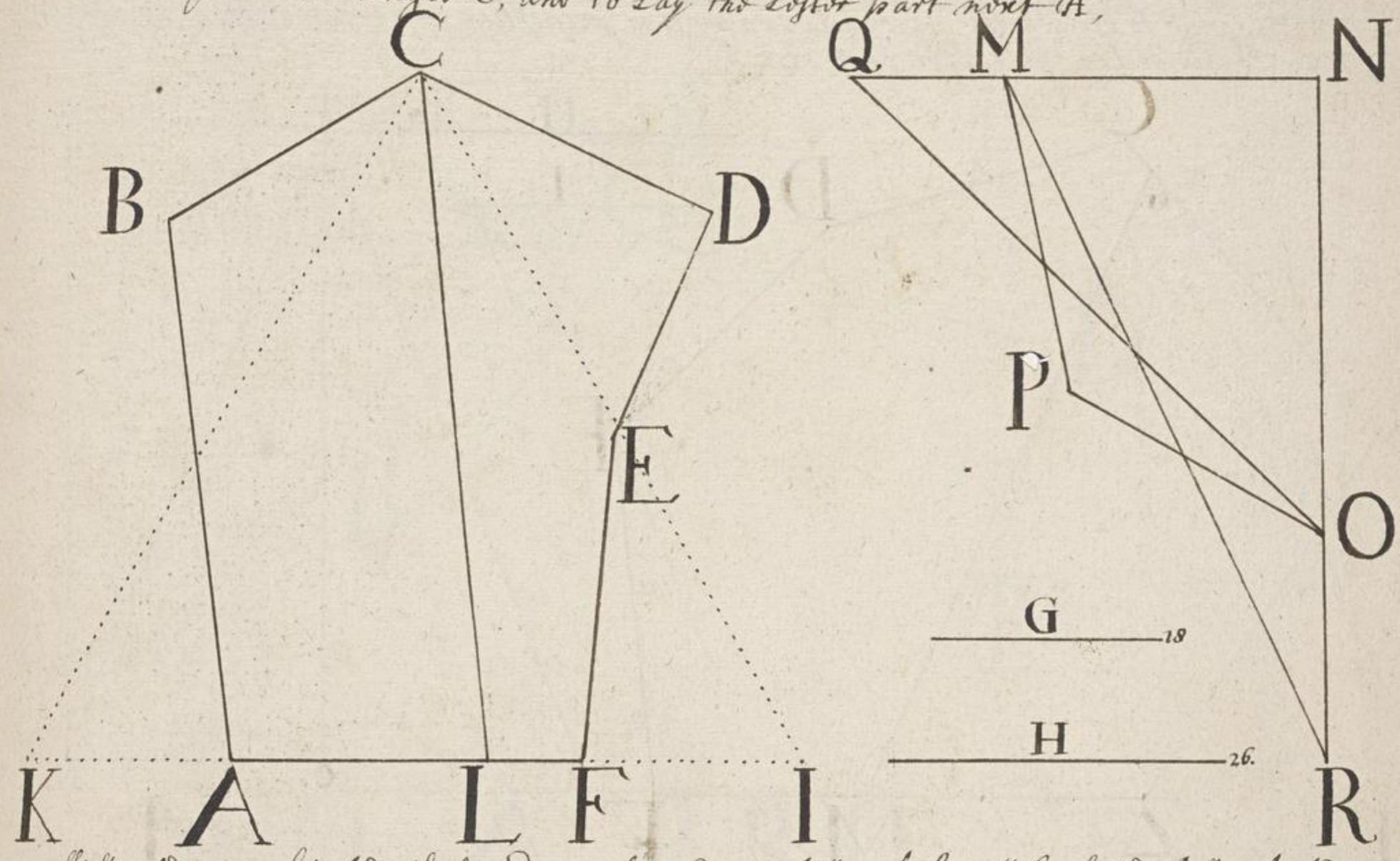
First increase the sides through which the line of partition must passe; till the meete in H, then by the 37.1
49.th Prob: finde the base of a Triangle equall to ye Trapezia given, which will be A I, That done, 12.6
reduce the square, whose side is the line X, into a Triangle whose perpendicular may be equall to ye 17.1
perpendicular from B, upon A D, so shall his base be the distance I K, which set from I, to K, and 31.6
then proceede in all points as before, and finde the point P, then draw the line P E Q, so shall you cut of the figure P D C Q, equall to the square, whose side is the line X which was required.

And in the same manner, may be cut of a number of Acres, with a line drawn through the point E, for make any figure to contayne so many Acres as the square, whose side is the line X, containeth, then cut of C D P Q, equall thereunto as already is taught, so shall you cut of, so many Acres with a line drawne through a given point within, as was required.

Prob. 122.

To Divide a plot given, according to any proportion assigned, with a line drawne from an angle appointed, and to lay the part required, towards a place assigned.

Let A B C D E F, be a plot given, to be divided into two parts. (as I to H,) with a line drawne from the angle C, and to lay the lesser part next A,



First consider on what side the Line drawne from C, must fall, which will be the side A F, which drawn forth both wayes at length to I, and to K, then by the 43.th prob: or by the latter part of y.e 50. reduce y.e plot into a
37.1 Triangle, with two Lines drawne from y.e angle C, or only finde y.e points I, and K, (which is better) so shall I K, be
10.6 the base of a Triangle equall to y.e whole plott, whose perpendicular is the shortest distance from C, upon that base, That done, deuide I K, in L, as I to H, so y.t is I to H, so I L, to L K, (and because the lesser part is to be Laid next F,) therefore hauinge deuided the base I K, according to the Lines I H, let y.e lesser part from I, to L, else must it haue beene set from K towards I, Lastly, draw the Line C L, so shall you deuide y.e plott into two parts, with a Line drawne from the angle C, in proportion one to the other, as I, to H, which was required.

Prob: 123.

To cut off from a plot, with a Line drawne from an angle assigned, a part equall to a figure given, and to lay the part cut of towards A place appointed.

Let in the left diagram M N O P, be a figure given, to be cut of from the plot A B C D E F, with a Line drawne from the angle C, and to lay the part cut off next F,

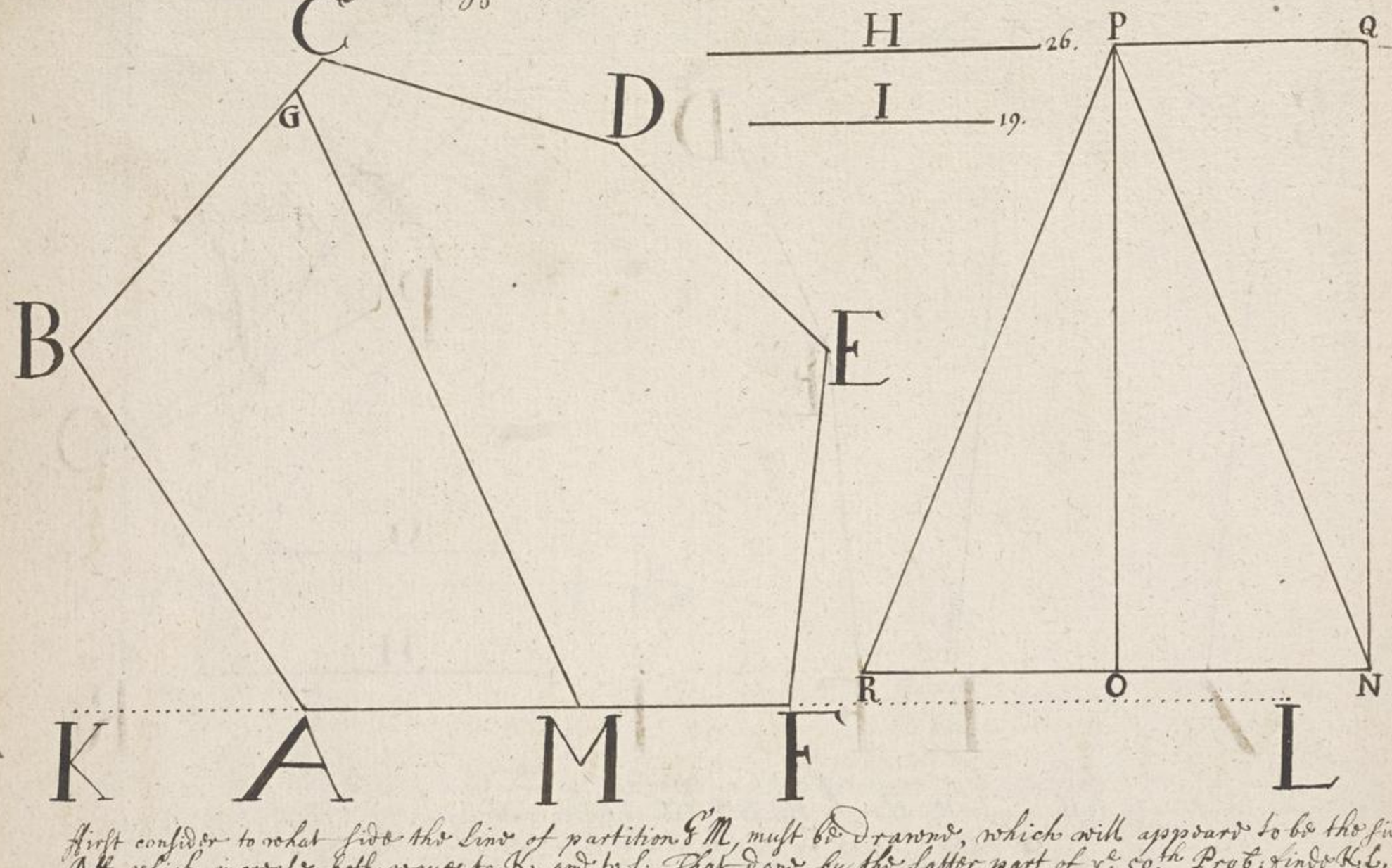
Here you must likewise consider, to what side the Line of partition C L, must be drawne, for that is always to be first increased that way, as the figure cut off is to be Laid, and in this case, there is now needs to find the base of a triangle equall
37.1 to y.e whole plot as before, But it may suffice by the 50. Prob: to drawe the Line C L, on that side as the plot is, to
1.6 be Laid) or only to finde the point I, and not the point K, to be at all, That done, reduce your figure M N O P, given to be cut of, into such a triangle, whose perpendicular may be equall to y.e perpendicular from C, (in the plot) to the base A F, as first into the triangle Q N O, then that into the triangle M N R, whose perpendicular N R, may be equall to the perpendicular from C on I K, the base of the plot, so shall your figure M N O P, be at Last brought into the triangle M N R, whose base is N M, which take and set in the plot from I, to L, (because it is required to Lay the part cut of next F,) Lastly, draw from C to L the Line C L, so shall you cut of the figure C D E F L, equall to M N O P, your figure given, with a Line drawne from the angle C, as was required.

And in the same manner may you cut off a number of Acres, Roods, Poles, &c. and lay them towards a place appointed.

Prob. 124.

To devide a plot according to any proportion given, with a line drawn from a point assigned in any of his sides, and to Lay the part required towards a place appointed.

Let ABCDEK, be a plot given, and Let G, be a point assigned in the side BC, from whence a line is to be drawn to devide the plot into two parts in proportion one to the other, as the line H, to the line I, and to Lay the bigger part next K,



first consider to what side the line of partition GM, must be drawn, which will appeare to be the side AK, which increase both wayes to K, and to L, That done, by the latter part of ye. 50th Prob: finde KL, for the base of a triangle, equall to the whole plot, whose perpendicular is the shortest distance from the point 37.1 10.6 *G, on that base, then devide that base in M, as the line KL, to the line I, (and because the bigger part is to be Layd next K, therefore let the bigger part of the base (being so devided) from L towards K, meet with in M, Lastly, from the assigned point G, draw to M, the Line GM, so shall you devide the plot into two parts in proportion one to the other, as the line KL, to the Line I, with a Line drawn from the point G, and Laying the bigger part next K, which was required.*

Prob: 125.

To cut of from a plot given, with a line drawn from a point in one of his sides a part equall to a figure given, and to Lay the part cut of towards a place appointed.

Let in the Last diagram ABCDEK, be a plot, and NOPQ, be a figure given, and it is required from ye. plot to cut of so much as the figure NOPQ, with a Line drawn from the point G, and to Lay the part cut of next A.

Here is no needs to find the base of a triangle equall to the whole plot as before; but it may suffice to lengthen ye side KA, and to find the point K, by 50. Prob: which is one end of the base of a triangle equall to the whole plot 37.1 1.6 *whose perpendicular is the shortest distance from G, upon that base, and here note, that the base KA, must be increased that way as the part cut of is to be Laid, viz: towards (A,) That done, reduce your figure given NOPQ, to be cut of into such a triangle, whose perpendicular may be equall to a perpendicular from the given point G, upon the base (of the plot) AK, as into the triangle NPR, whose base is NR, which take and set from K, to M, Lastly, from the point G, to M, draw the Line GM, which shall cut of the part ABGM, next A, equall to the given figure NOPQ, with a Line drawn from the point G, as was required.*

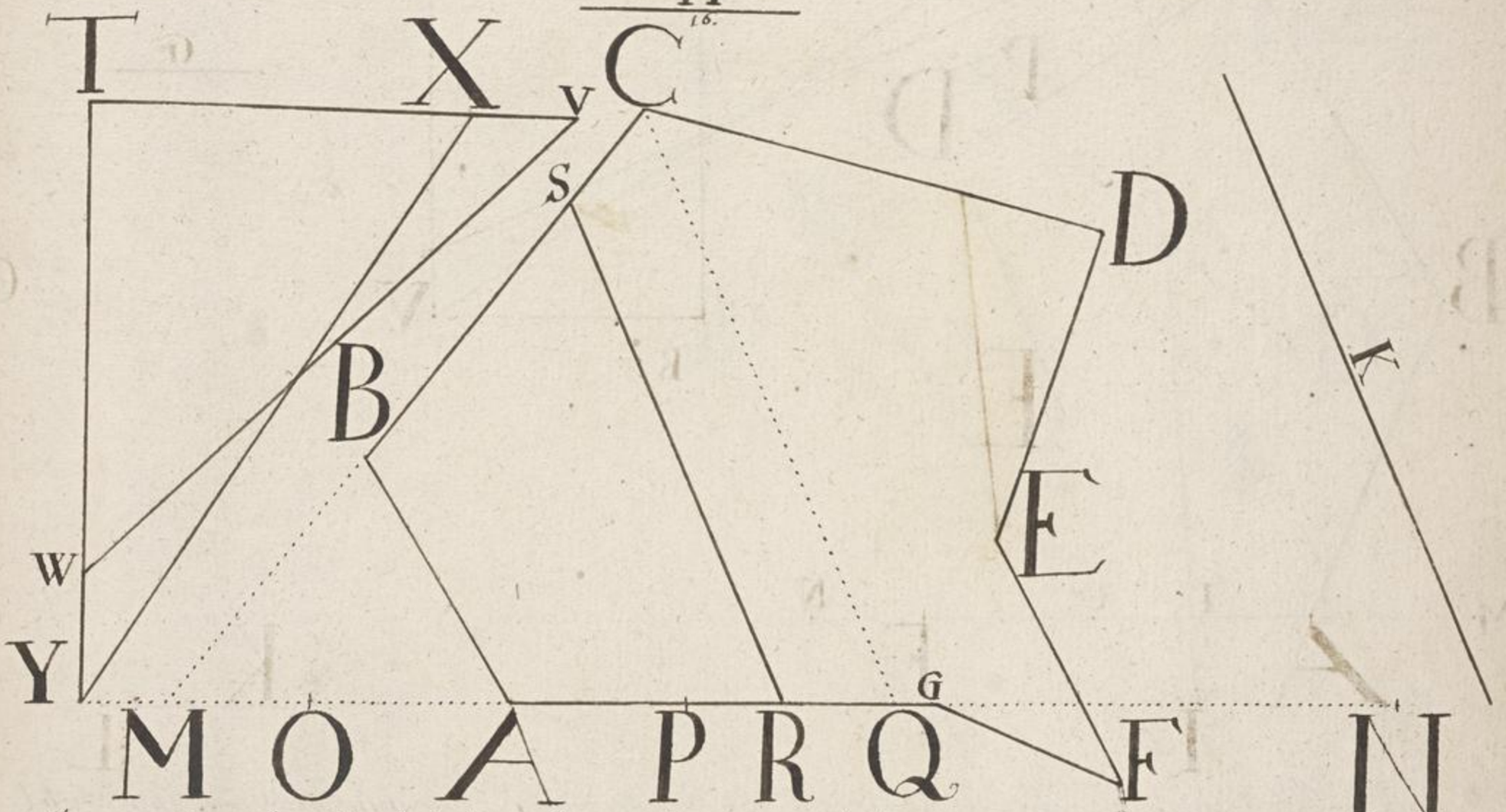
Prob. 126.

To devide a plot according to any proportion assigned, between two Lines with a parralell to a Line given, and to lay the part required towardt a place appointed.

Let ABCDEFG, be a plot given, to be devided into two parts, in proportion one to the other, as the Line H, to the Line I, with a parralell to the Line K, and to lay the lesser part next A.

I
31.

H
16.



First consider through which sides the Line of partition R S, shall passe, which will be the sides F A, and C B, which increase till the motte in M, also draw forth the side or base A G, to N, then by the latter part of the 50. Prob: finde the whole base of a Triangle equall to the plot, which will be ON, whose perpendicular shall be the shortest distance from K, to the base: Then devide that base ON, in P, as H to I, and set the lesser part from O to P, next A, (because it is so required) Then by C, draw a parralell to the given Line K, to cut the base ON, in Q, as the pricked line line CQ, That done, between MP, and MQ, finde a meane proportion, as MR, Lastly, by the point R, draw a parralell to the Line K, as RS, so shall you devide the given plot into two parts, as H to I, and also lay the lesser part next A, with a parralell to ye Line K, as was required.

37.1
10.6
1.6
13.6

Prob. 127.

To cut of from a plot with a parralell to a Line given, a part equall to a figure given, and to lay the part cut of towards a place appointed.

Let in the Last diagram, ABCDEFG, be a plot, and let FVW, be a figure given to be cut of; with a parralell to the Line K, and to lay it next A,

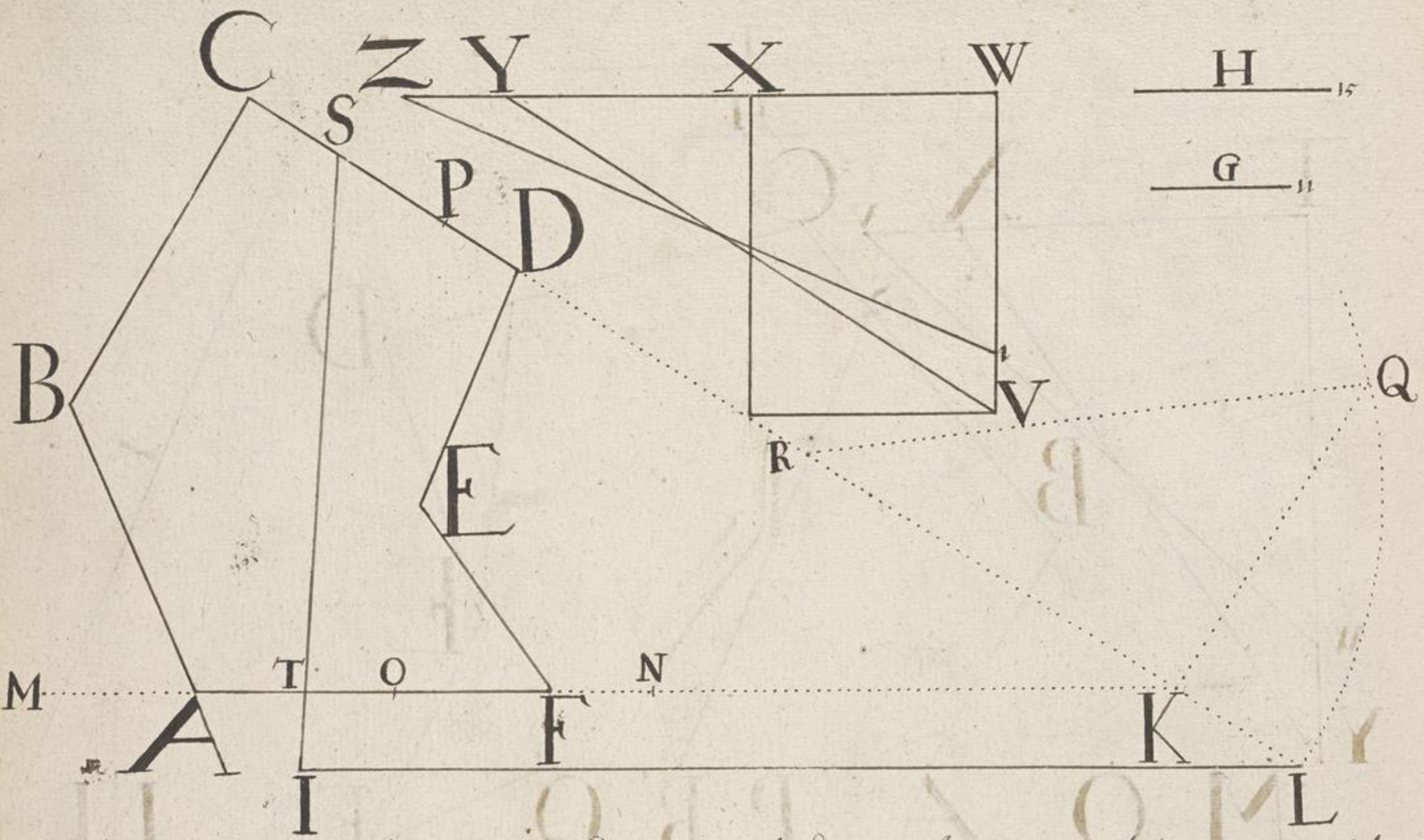
First consider through what sides the Line of partition must passe which are FA and CB which increase till the motte in M, then by the 50. Prob: finde the base of a triangle equall to the whole plott, as ON, whose perpendicular is the shortest distance from C, upon that base; That done, reduce your figure given to be cut of, viz: FVW, into a Triangle, whose perpendicular may be equall to a perpendicular from C upon the base ON, as into the triangle, FXY, whose base is FX, which take and set from O, to P, Then by C, draw a parralell to the Line K, as the pricked Line CQ, to cut the base ON, in Q, That done, finde a meane proportion between MQ, and MP, as MR, Lastly, by the point R, draw a parralell to the given Line K, as RS, so shall you cut of the part BARS, equall to FVW, the figure given, and lay it next A, with a parralell to the Line K, as was required.

37.1
1.6
Cor.19.6

Prob. 128.

To divide a plot, according to any proportion assigned, with a line drawn from a point without.

Let ABCDEH, be a plot given, to be divided into two parts in proportion one to y^e other, as the line F, to the line H, with a line drawn from the point I,



first consider; through which sides the line drawn from the given point I, must passe; which will appeare to be AH, and CD, therefore; increase them till the meete in K, and draw forth CD, at length to L, then by the point I, draw a parralell to AK, as IL, to meete with CD, being drawne forth in L, That done; finde by the 30. Prob: the points M N, so is the line M N, the base of a triangle equall to the whole plot, whose perpendicular is the shortest distance from C, upon that base, which base M N, devide by the 22 Prob: in O, as F to H, viz: that as F to H, so N O, to O M, then say by the 21. Prob: if L I, give K O, what K C; answer K P, that done, betweene L K, and K P, finde a mean proportion, as K R, then devide always, K P, into two equall parts in R, and draw the line Q R, which set from R to S, Lastly, from the point I, to S, draw the line I T S, so shall you devide the plot given, A B C D E H, into two parts, viz: S D E H T, the lesser, and S C B A T, the bigger, in proportion one to the other, as the line F, to the line H, and with a line drawne from the point I, without, as was required.

37.1
10.6
13.6
47.1
16.6

Prob: 129.

To cut of from a plot, with a line drawne from a point without a part equall to a figure given.

Let in the last diagram A B C D E H, be a plot given, and let I, be a point without, from whence it is required to draw a line, to cut of so much as the longe square V W X,

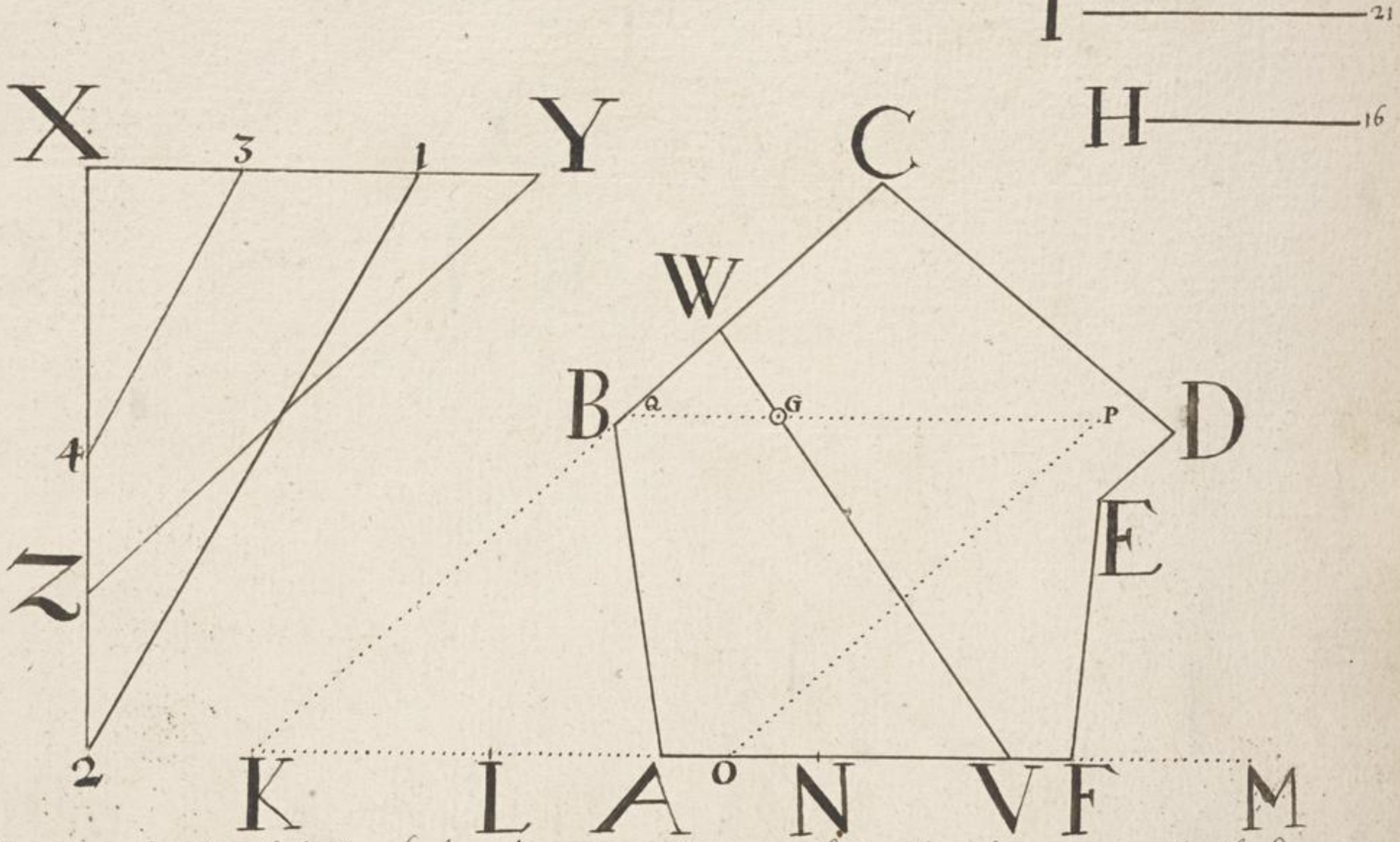
first as before; consider through which sides the line of partition shall passe; which are A H, and C D, the which increase till the meete in K then finde the point N, by the 30. prob: (for it needeth not to finde the point M, and so to git the whole base of a triangle equall to your plot) That done; reduce your figure given to be cut of, viz: V X, into the triangle V W Y, and againe, that triangle into the triangle Z W I. whose perpendicular Z W, may be equall to a perpendicular from C, upon the base A H, of your plot given, then is the base of that triangle W I; which take and set from N to O, then according to the last Prob: finde the point S, and draw the line I T S, which shall cut of the figure S D E H T, equall to V W X, the longe square given, which was required.

37.1
13.6
47.1
16.6

Prob. 130.

To divide a plot into two parts, (according to any possible proportion given,) with a Line drawne through a point within.

Let ABCDEH, be a plot given, and let G, be a point within, and it is required to draw a line through that point to divide the plot into two parts in proportion, as the Line H, to y^e Line I,



first consider, through which sides the Line of partition shall passe, which will easily appeare to be the sides CB & HA, the which increase till the meete in K, then by the 50: Prob: finde LM, the base of a triangle equall to the whole plot, (whose perpendicular is the shortest distance from C, upon that base,) which base LM, divide by the 22.th Prob: in N, as H, to I, so that as H to I; LN, may be to NM, That done, from the point G, within, let fall a perpen: to the base LM, or take the shortest distance to it, and then say by the 21.th Prob: if that Perpendicular or shortest distance, give the perpendicular from C, upon the base LM, what the halfe of KN, answer KO, which set from K, to O, then by O, draw a parralell to KC, as OP, and by the point G, drawe also a parralell to the base LM, as QGP, to meete with the other parralell in P, That done take by the 57.th Prob: the square of QG, from the square of GP, reste in the right angled triangle 3X4, the line X4. for the side of a square remaining; which take, and set from O, to V, Lastly, draw the line VGW which shall divide the plot into two parts Viz: WBAV, and WCDEHV, in proportion one to the other, as the Line H to the Line I, and with a Line drawne through the point G, within, as was required.

37·1
10·6
12·6
47·1
31·6

Prob: 131.

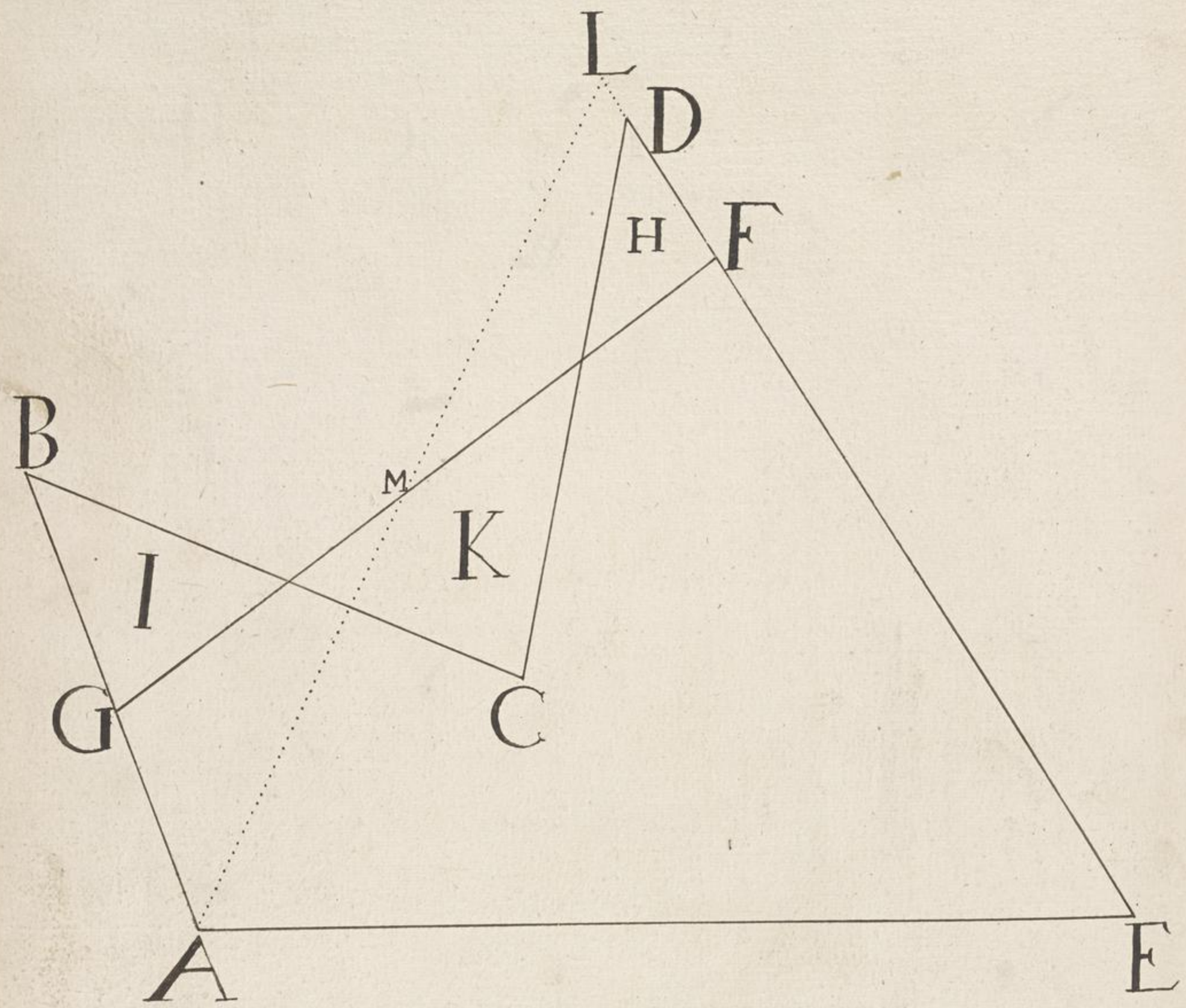
To cut of from a plot given (a possible part) equall to a figure given, with a Line drawne through a point within.

Let in the last diagram ABCDEH, be a plot given, and let it be required to cut of from it so much as the figure or triangle yxz, with a Line drawne through the point G, within.

first consider, through which sides the Line drawne by G, must passe, which are CB, and HA, the which increase till they meete in R, then bring your triangle yxz, to be cut of, into the triangle 1x2, whose perpendicular x2, may be equall to a perpendicular from C, (in your plot) to the base LM, so shall x2, be the base of y.t triangle; which take, and set from L, to N, then say as before, if the perpendicular or shortest distance, from G, upon LM, give the perpendicular or shortest distance from C, upon the same base LM, what the halfe of KN, answer KO, then by O, drawe a parralell to KC, and so finish it in all points, as in the last Prob: and drawe the Line VGW, so shall you cut of the figure WBAV, equall to yxz, the triangle given, with a Line drawne through the point G, within, as was required.

Prob. 132.

There is a plot as A B C D E, and in the side D E, is a point as H, from the which it is required to draw a line as H G, to cut off the two triangles H, and I, and to take in the triangle K, equall to them both, so that y^e Triangle Trapezia A G H E, may be equall to y^e given plot A B C D E, &c.

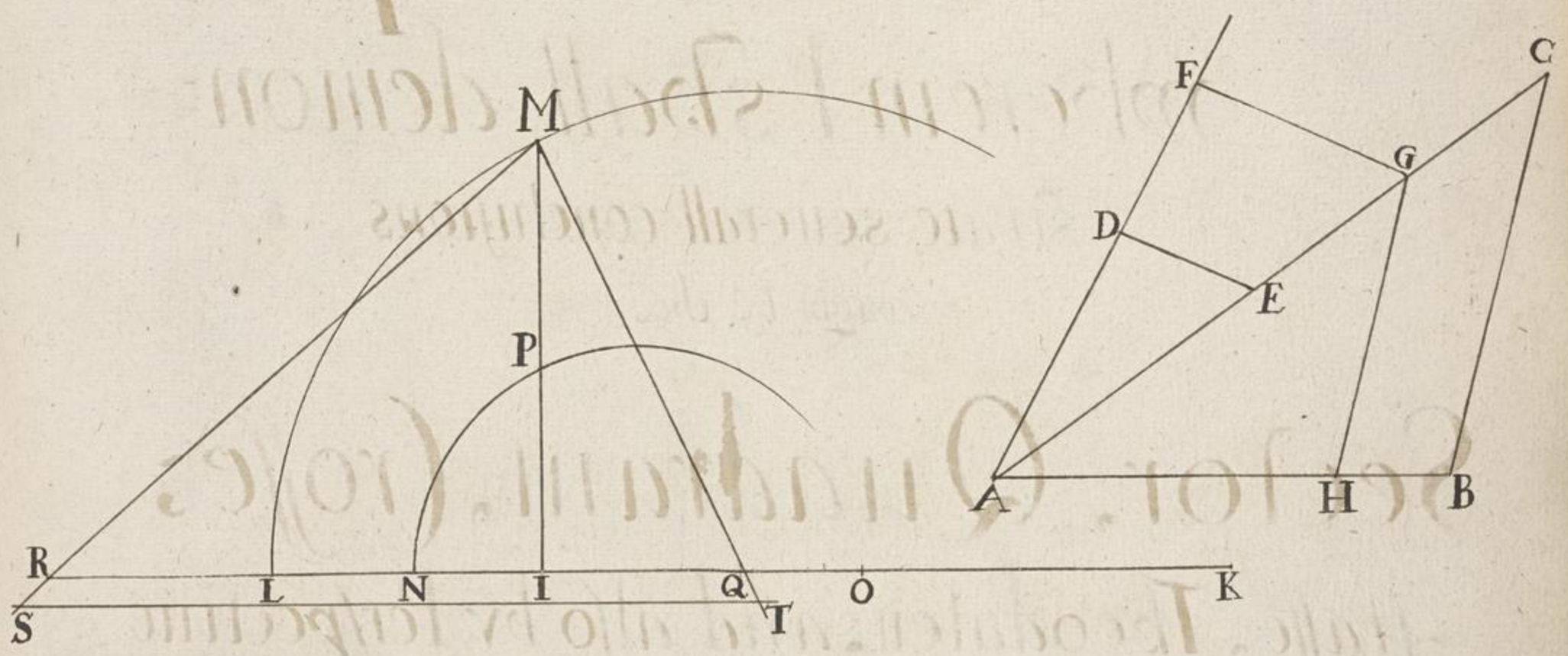


first, bring the plot into the Triangle A E L, equall thereunto, and then by the 41.th Prob: (counting E L, L A, and A B, the three lines, and H, the point given,) cut off the triangle A L M, and take in the triangle A E M, equall thereunto by drawing the line H G, according as in the said 41. Prob: is taught, so shall you git the Trapezia A G H E, equall to the plot given, A B C D E, and then of nessesity must the triangle K, taken in, be equall to both the triangles H, and I, cut off together; which was required.

37.1

Prob. 133.

There is a peece of ground, as ABC, and adioyninge to it another part as ADE, whose fide AD, runeth forth by it; now it is required, to finde a point in the fide AC, as F, from whence a parralell drawne to CB as FH, and another to ED, as FH, in fuch fort, yt the part FCBH, cut of, may be equall to the part of FED, taken in, fo yt the whole Trapezia AHFH, may be equall to yc two triangles ABC, and ADE, together.



Firft betweene AC, and his perpendicular from B, finde a meane proportion which will be IM, alfo betweene AE, and his perpendicular from D, finde a nother meane which will be IP, then by the 56. prob: adde there fquares together, fo fhall the line MQ, be the fide of a fquare equall to them both, that done, by the 54th Prob: deuide the fide AC, in power as AE to his perpendicular from D, fo that as the perpendicular from D, upon his bafe AE, to AE; fo yc leffer part of the power of AC, to the power of AC; beinge fo deuided, which leffer part in power is the line IR; whofe fquare adde to the fquare of IM, fo fhall MR; be the fide of a fquare equall to them both, that done, fay by the 21 prob: if MR, giue MQ, what AC, which is MS, anfwer MT, which take and fet from A to F, upon the fide AC, Laftly by F, drawe a parralell to CB, as FH, Alfo, a parralell to ED, as FH, fo fhall you cut of the Trapezia FCBH, and take in the Trapezia HFED, equall thereunto, fo that the whole trapezia AHFH, fhall be equall to both the triangles ABC, and ADE, together, which was required.

From whence a further knolidge may be deriued, that is how to cut of from a Triangle, Trapezia, or plot, any part or parts with a parralell to a crooked line, as with a parralell to HFH, &c. but I fhall beare brake of haueing yc Inftrumentall part to fall upon.

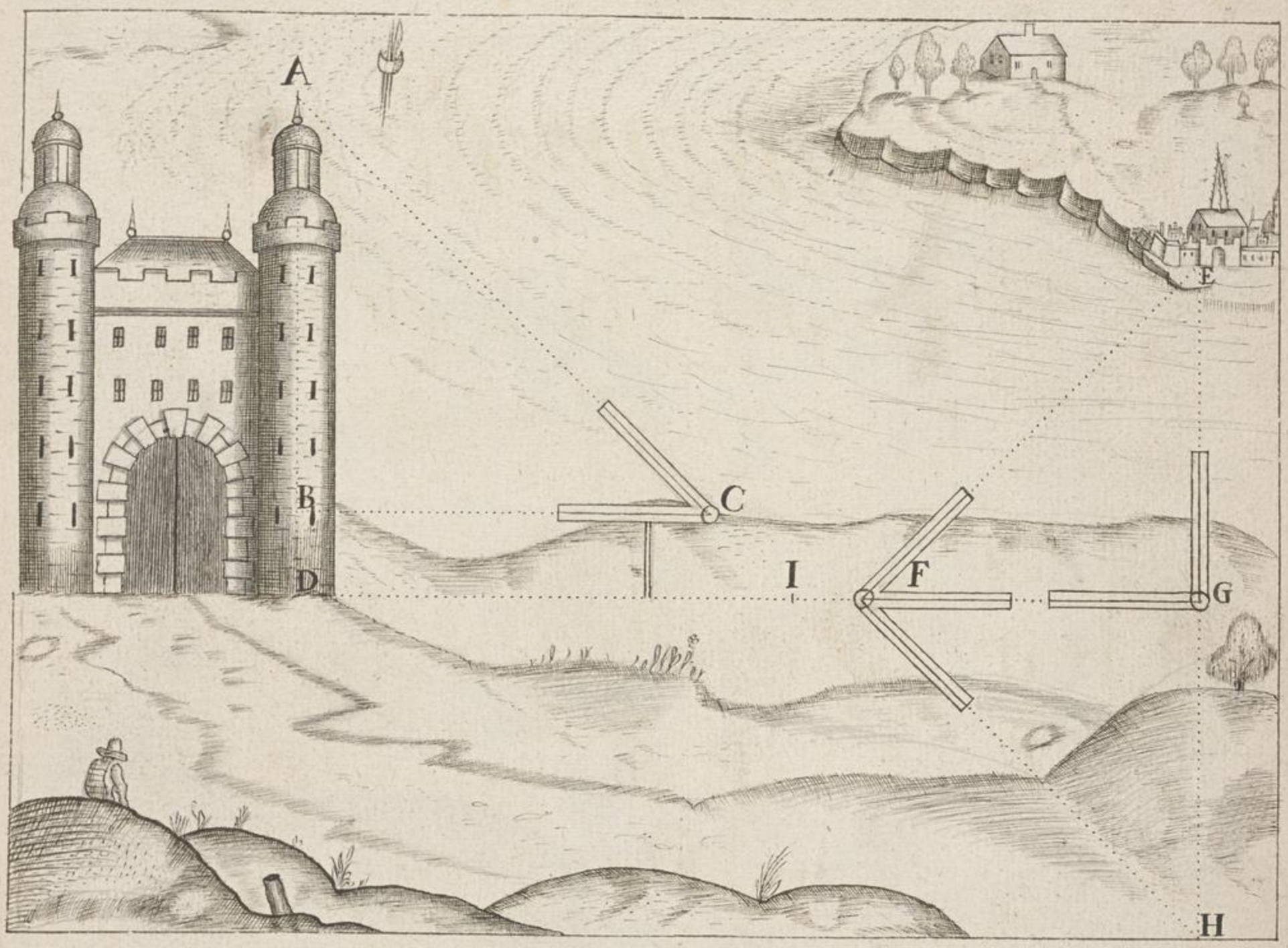
Now followeth the Instrumentall part wherein I shall demonstrate seuerall conclusions wrought by the Sector, Quadrant, Crosse-staffe, Theodalett, and also by Perspectiue glasses, by the Peractor, Circumferenter, & Plane-table, with Sundry strange wayes both by Instrument & without to set forth the trew discription, or exacte plotting of a whole Region, beinge uery plesant and full of delight also vsefull for all such as are Studius of the Mathematicall practis to whom I, shall recummend ./

M.r EDMOND GVNTERS DESCRIPTION & VSE OF THE

Seuerall scales & lines, graduated upon y.e Sector, Crosse-staffe & other Instruments, with a Canon of Artificiall Sines, & Tangents, to a Radius of 10000, 0000. parts, and the vse there of in Astronomje, Nauigation, Dialinge & Fortification, beings also very vsefull in these Studies./

Proposition. 1.

The manner how to take ether distance, or altitude, with the Sector.



Suppose ye altitude AD, were to be takn, to the foot whereof you may approch, open ye Sector, to 45. degrees, then go forwarde or backwarde upon ye Line DI, untill you may see ye highest part of ye altitude through ye sights as at A, the inferior branch of ye Sector, being parrallell to ye Horizon, then measure the distance betwixt ye center of ye Sector and ye Tower, adding to that distance ye Length of ye staffe (which supporteth ye Sector) and yt shall be ye altitude required, as appeares in ye figure AB, and BC, adding ye Length of ye staffe (being ye Sector,) to ye Line BC, you will finde that it will be equall to AD, which is ye altitude of ye Tower, required.

But to take a distance in any place as in the former figure the same operation may be vsed, except only ye two branches of ye Sector shall be turned parallell to ye Horizon, having first mayd a right angle at ye point E, Or you may worke thus, first, strike a stright Line as EFH, of what Length you please then opening your Sector to a right angle, and setting it in ye point F, so that you may see through ye sights ye point E, and where ye other sights Leades you, set up a marke as in I, Then goe towards it, and at your pleasure in the same Line, set your Sector opening it so, that you may see ye point E, and I, and keeping your Instrument at the same windowe and in the same place, only turne it to the other side so yt you may see the point I through the sights which before saw E, and where the other Line shall cutt ye first Line EFH, set a marke which will be in H, precisely, and that shall be the distance required FE, The domonstration of this proposition is grounded upon the 1. and 26. of the 1. of Euclid.

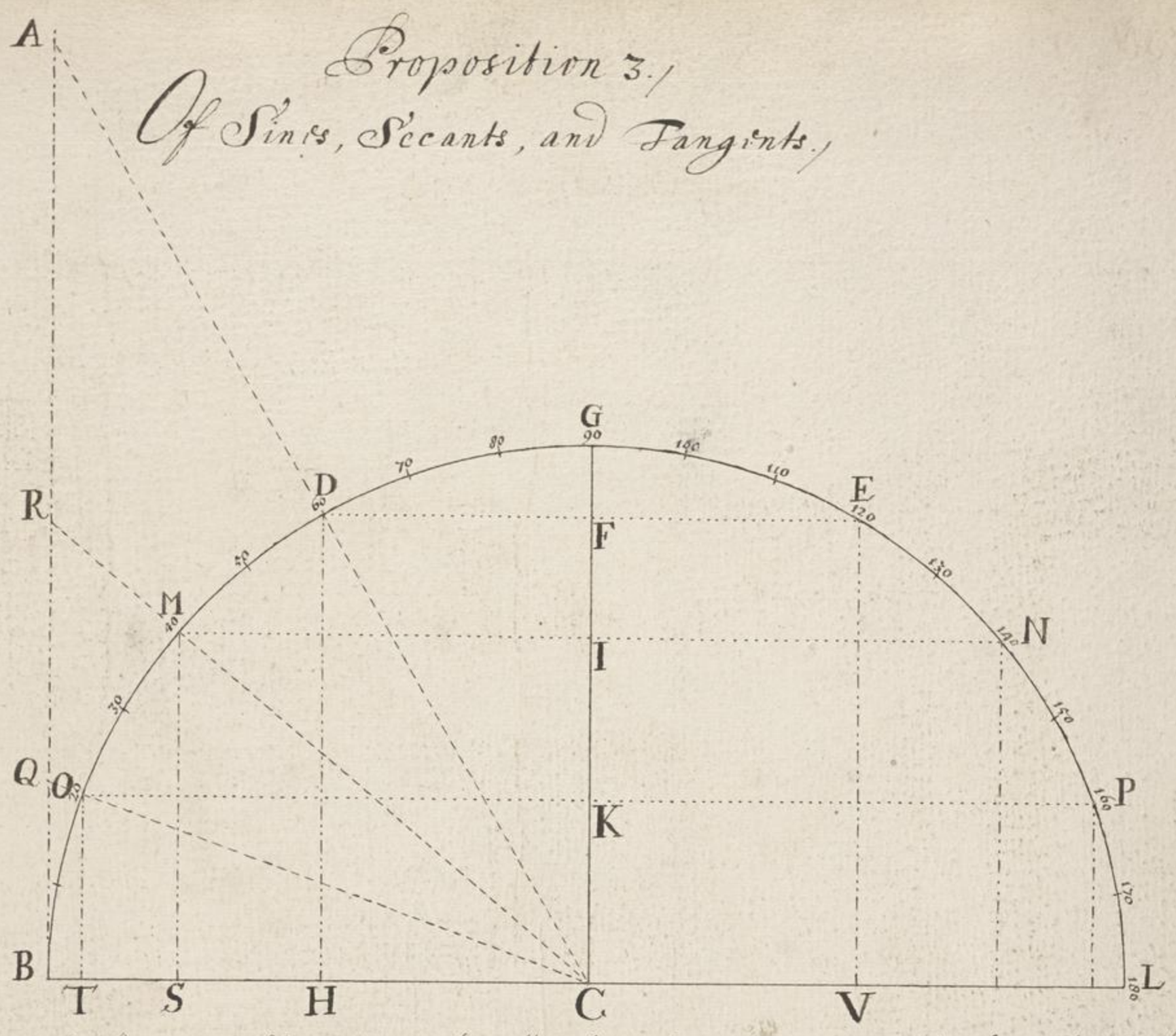
Proposition. 2.

How to take any distance or altitude Inaccessible with the Sector.

To obtayne the Altitude A B. you must first take the distance B C, as is tought in the former Proposition, and knowing the the distance BC, which I will suppose to be 100. fathom Set in the point C, your Sector and Direct your visuall Line through the two upper Sights to the top of the Altitude A, and Let the branch of the Sector be parralell to the Horison, Then Leaving your Instrument at the same wideness, Let fall a Perpendicular Line upon the Line of Lines on the Sector which is Deuided into equall parts passing by the 100. number of the inferior branch noted D. and note what number the perpendicular doth cut upon the upper branch of the Sector noted H, Which I suppose here to be 150 part or number, and then Set the two points of a paire of Compasses upon the two numbers, to wit, the one point upon 100. and the other point upon 150. of the equall parts, Then transeport the points of the Compasses all along one branch of the Sector upon the Line of Lines or equall parts, and the two points shall denote as many parts upon the forsaid Line on the Sector, as the Towre doth containe fathoms in altitude, addinge the length of the foote which supporteth the Sector, The demonstration of this Proposition is grounded upon the 4 Proposition of the 6 of Euclide.

Proposition 3.

Of Sines, Secants, and Fangents.



Becaus the most noble, most artificiall, and most certain way of taking of Altitudes, distances, or other Dimentions, is by the Sines, Secants, or Tangents, I have set downe there operations in such propositions as are vsuall in this subiect, and before I entir on the method of operation, it is nessesary to define what the said Sines, Secantes, and Tangents, are:/

first, a right Sine is halfe the Subtence of the double Arke; A Subtence, sometimes called a Cord, is a right line drawne from any part of the Circumference of a Circle, unto any other part of the same Circumference, so the right Line DE, is the Subtence or Cord of the Arke DGE, halfe of which is DH, the Sine of the Arke DG; and so is MN, the Subtence of the Circumference or Arke MGN, halfe of it is MI, which Sine of ye Arke MG; now the Arke MG, is halfe of the Arke MGN, and MI, is halfe of the Cord or Subtence of that double Arke, viz: MGN; hence it is according to the definition aforesaid, that the Sine of any Arke is halfe the Cord or Subtence of the double Arke; by the same reason OF, is the Sine of the Arke BO, and MS, is the Sine of the Arke BOM, and so of others./

Note that the Sine of any Arke Lesse then a quadrant is also the Sine of the Complement of ye Arke unto a Semicircle, so the Sine of BO, 20 degrees being OF, the same OF, is also the Sine of the Arke OGL, 160. degrees, for that the Subtence or Cord of an Arke of a Circle is common both to the lesser Segment that it subtendeth, and also to the greater, and therfore halfe of the Subtence wch is the Sine shall be common unto halfe the lesser Segment, and also unto halfe the greater, which two halfes put together make a Semicircle; and therefore the one is the Complement of the other./

Note further that ye totall Sine, the Sine of 90. degrees, or the Radius, is nothing else but the Semidiamiter of any Circle, viz: CB, or CG,/

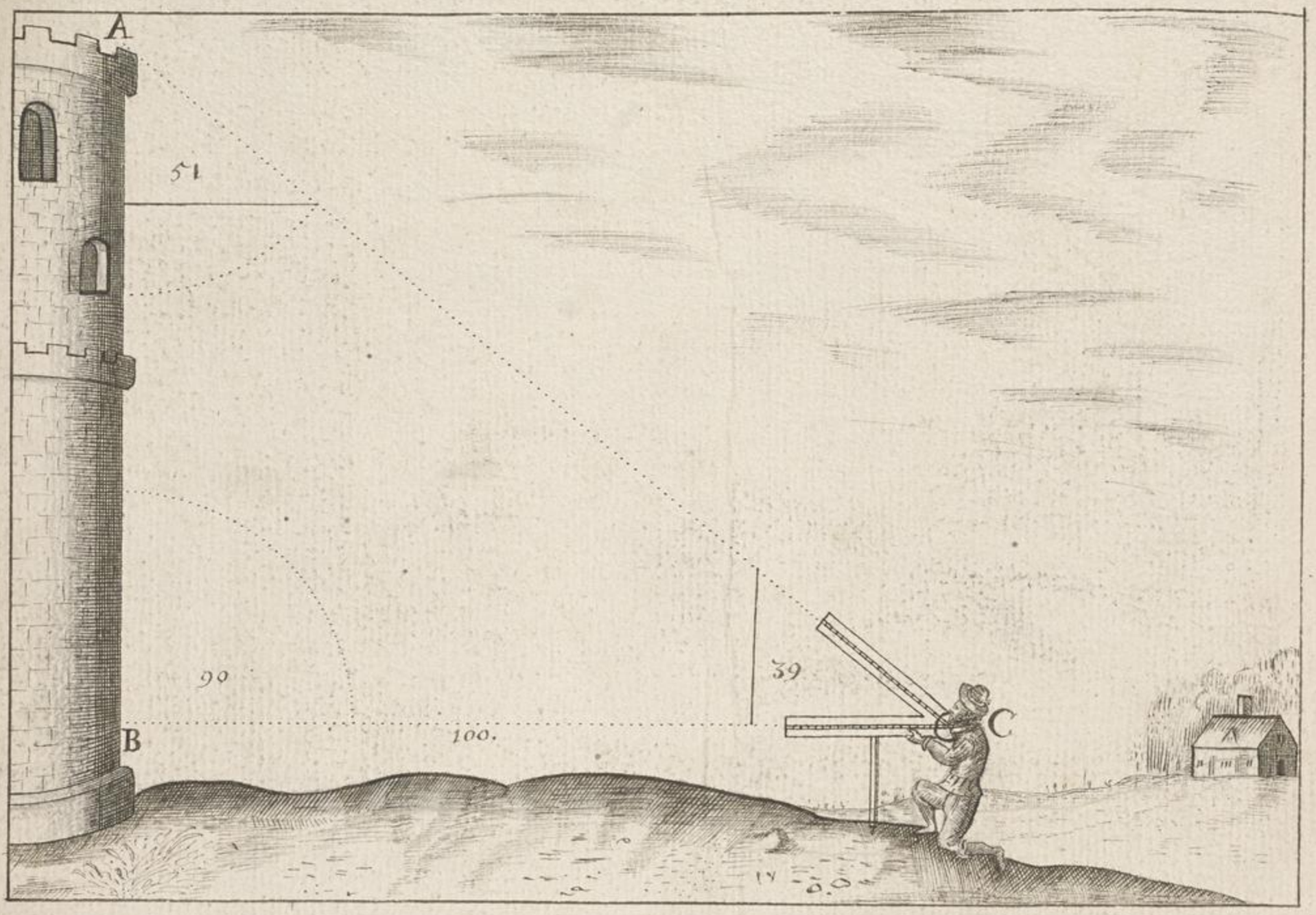
If a Line be drawne touch a Circle, it is called a Fangent, (a tango) as the Line AB, toucheth the Circumference of the Circle in B, and so AB is called a Fangent Line, and is scituated on the Terme of the Radius CB, and perpendicular thereto,/ By the 18.th Proposition of the 3. of Euclid./

Secondly, The Secant of an Arke is a Line containing betweene the Center and the Line Fangent, so that it passe by the given Arke, so if BO, be a given Arke, CQ is the Secant thereof, and if BM, be a given Arke, then is CR the Secant thereof,/

Thirdly, the Fangent of an Arke is a Line contained betweene the terme of the Secant, and the touch point, so BQ, is the Fangent of the Arke BO, and BR is the Fangent of the Arke BM, &c./

Proposition 4.

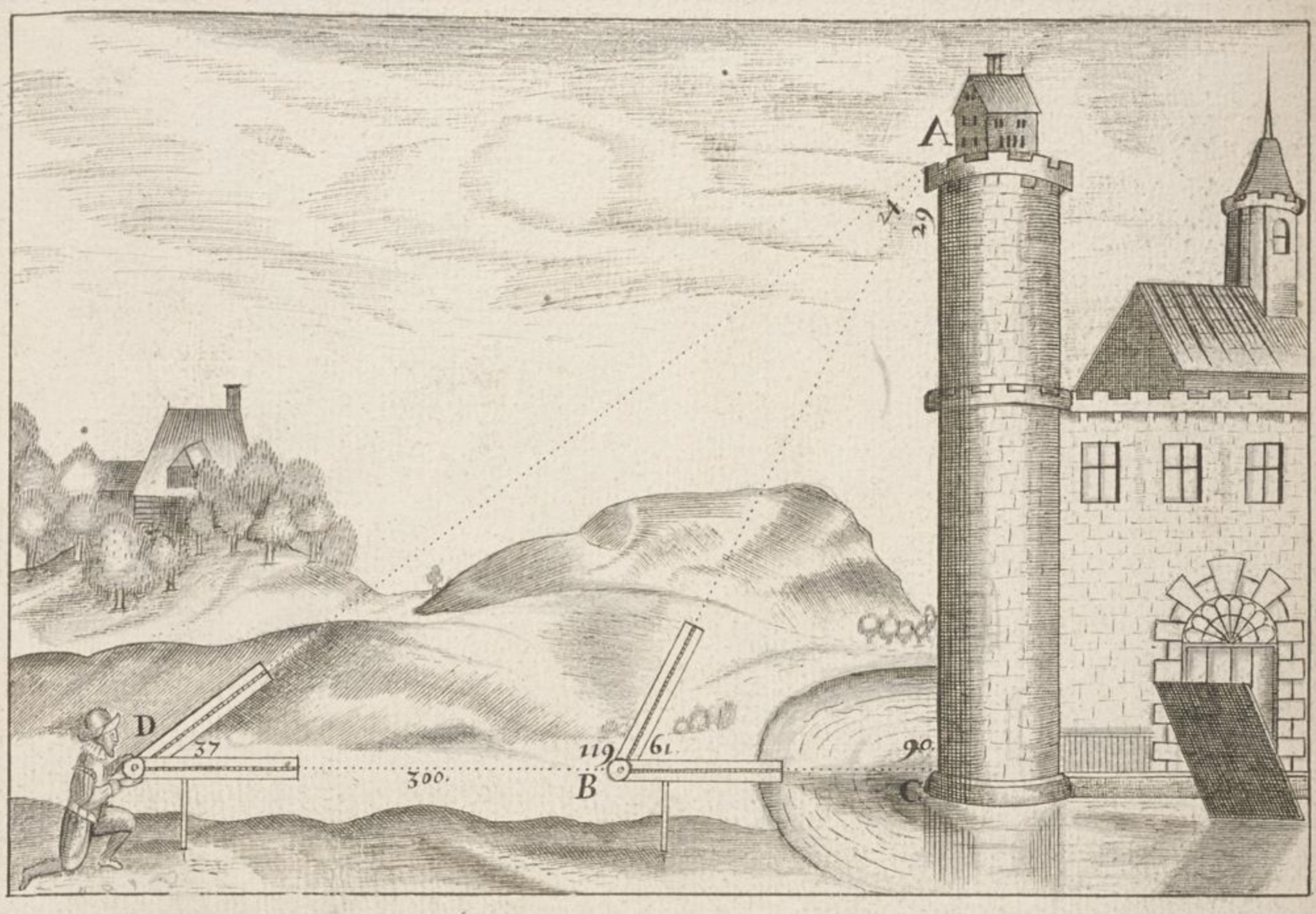
How to take any Altitude or distance by the Sines, Tangents, & Secants.



first, note that in all Triangles as each side is the one to the other, euen so each sine will be one to y^e other; That is to say, each sine of a Triangle equilaterall shall be equall amongst themselues, or one sine, as the sides of that Triangle are all equall, and the sine of a Scalene triangle shall be all inequall and different amongst themselues, as the three sides of the Triangle are different one from another; Now for operation let it be proposed to take the Altitude AB, to the base or foundation whereof you may well approach, then there begins to measure your paces or fathoms from the base B, to some place in the plane, which now will suppose to be C, and there set your Instrument ether Sector or any other wth which you may take the degrees of an Angle, and in the point C take that Angle which is found to be 39. degrees, and the angle B, is already knowne to be 90. degrees, the Tower standing upright; now rests to know the degrees of the Angle A, which to obtaine adde 90, to 39. and it maketh 129. which you must substract from 180. and then will rest 51. which the Angle A. containeth, and so now will yeare suppose 100. fathom, and to know the quantity of the other two sides AB, and AC, by the Sines, Tangents, or Secants, you must looke in a table of Sines the sines of each angle which will be found as followeth, the sine totall, or the demidiameter being supposed of 100,000. parts the angle A of 51. degrees will haue for his sines, 77715, parts; B. of 90. degrees will haue for his sines, 100,000. parts; C. of 39. degrees will haue for his sines, 62932. parts; Then working by the rule of three, say, if the sines of A 77715. giues the side BC of 100 fathams how many fathams will the sines of C, 62932 for the side AB, and dispose your rule of three as followeth; If 77715 --- 100 --- 62932. And hauing multiplied the seconde numb^r by the third, or the third by the second, and deuided the product by the first numb^r and the quotient of the diuision will be for ye side AB, 80. fathoms 70. inches 4. lines and 11/12 of a line, And to finde out the side AC, you must operate in ye same manner by the rule of three, & say if the sine A, of 77715. giues the side BC, of 100. fathoms, how many fathoms will the sine B, giue, which is 100,000. for the side AC, and hauing multiplied the second numb^r by the third, and deuided the product by the first, the quotient will be 128. fathams, 48. inches, 7 lines and 31072/77715 part of a line, which is almost one line for the side AC, and thus may you know any kinde of distance with great facilitie, only knowing the angles and one side.

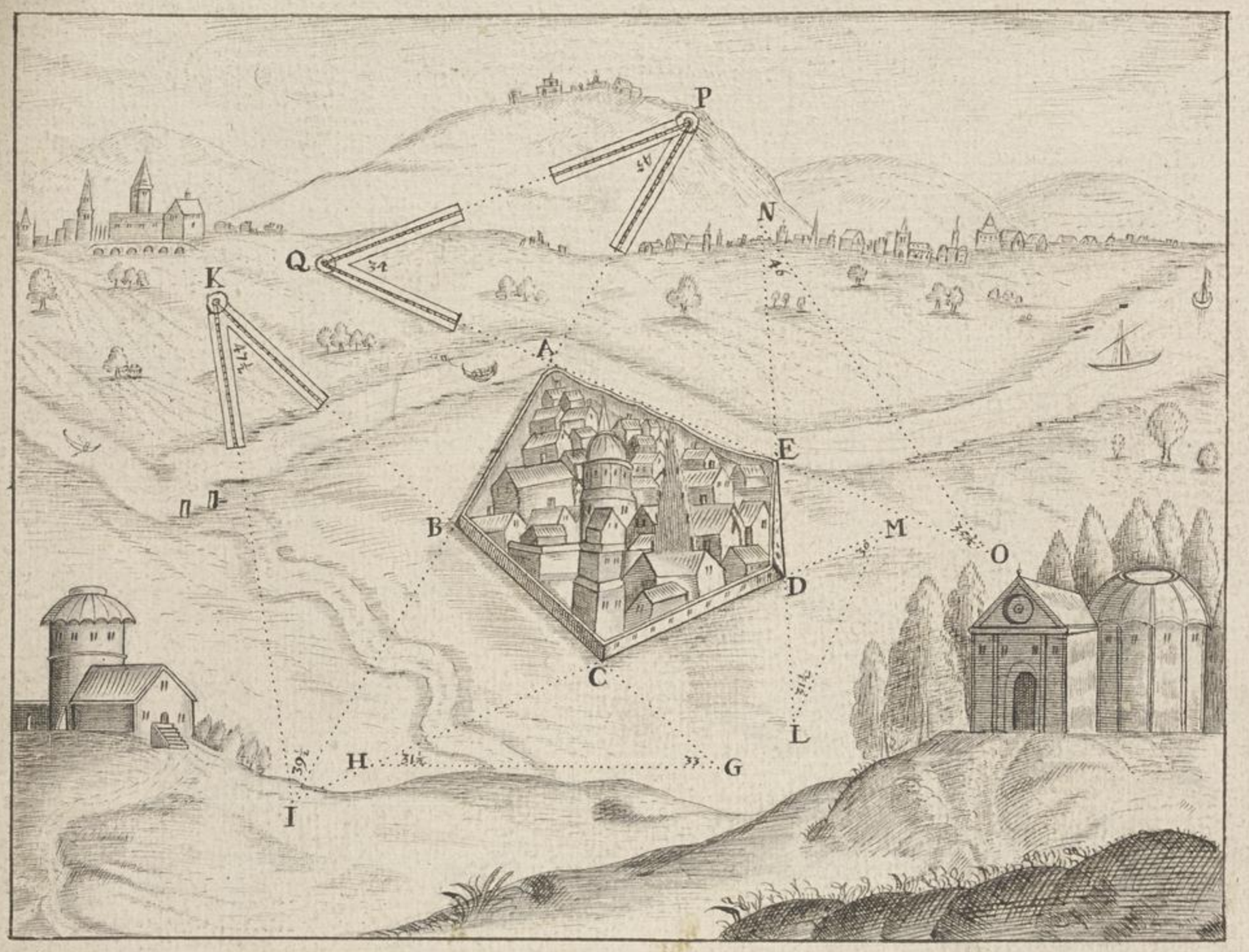
Proposition 5.

How to take any altitude or distance inaccessible by y.e Sines.



Let the altitude AC, bee proposed to be taken, and the nearest comming to it is B, then in that point B, take the angle ABC, as in the this figure, which is 61 degrees then assemble 61, with 90. the right angle opposite and the whole is 151, which you must substract from 180, and there will rest 29. for the angle A, and so the three angles of y.e triangle are known, but neither side; and therefore to know one of the sides, that wee may operate by the sines, tangents & secants, retire further backe or aside to D, and measure your pass, or fathams from B, to D, which I suppose here to be 300. paces, and in the point D, take the angle ADB, which is 37. degrees, and then ~~take~~ you may know that the angle exterior ABD, is of a hundred and nineteene degrees, for it is equall to the two interior angles ABC, and BAC, by the 32. proposition of the 1. of Euclide, or otherwise it is the complement of the halfe circle, of which the angle interior ABC, of 61. degrees is taken out, now you have the knowledge of two angles ADB, and DAB, the which being Joyned, substract them from 180. and then the third angle will remaine DAB, then shall you know the three angles of the triangle ABD, and one of the sides by which you may come to the knowledge of the side AB. of the first triangle ABC by the sine, and by the knowledge of the side AB, you may also know the side AC, by the sines, Tangents and Secants, as in the precedent chapter; and so in all manner of altitudes or distances, accessibles or inaccessibles, and it is to be noted, that one is not bound to wright backward, taking the second observation in D, but at the pleasure of the workman to make choise of the fairest place in the field, so I think no difficulty I shall be founde in these workes.

The manner how to take the plan of a town, or any place out of musket-shot.



Suppose you were to take the Plott of a Towne as A B C D E; first, hauinge considered that ye scituation of the plan hath a crooked arke as B A E; Those two Lines must be supposed stright as E Q and B K, making an Obtuse angle at the point A, and beinge farre off from this plan in the point P, consider that the Lines K B and Q E, make but one angle in the point A, then leaving a marke at P, withdraw from thence into some other place of ye feeld where your eye may rightly meete with the Line A E, which will happen in Q, where you must set another marke, now consider that if a Line be drawne from Q to P, it will forme a triangle as A P Q, whereof you may know two angels, P Q A and A P Q, which beinge done with your Instrument, and you finding the angle A P Q to be 15 degrees, and P Q A. 34 degrees, then adde 15. to 34. and there cometh in the whole 79. which you must substract from 180. degrees, and there will rest 101 for the third angle P A Q by the 32. proposition, Lib. 1 of Euclide, and the angle E A B is equall to the angle P A Q by the 15. proposition 1. then let us conclude that wee haue the angle B A E of 101. degrees, which was unknowne, then shall it be necessary in the place noted H, to know how the side C D is scituated in respect of the parts of the world, and with a declinatorie or Theodilate wee shall finde it to be seated North, west & South east, which shall serue us for the knowledge of all the rest; And in the former manner may be taken all the other angles of the plan proposed, and to haue the distance of each side of the plan, you must measure one only as the before taught; which I suppose it will shall bee B C, which shall be found to be 100. fathoms, and hauing found a side homologe to it or like to it, and diuided into 100. equall parts it shall serue for a scale to measure all the rest by.

Proposition. 7.

The vse of ye Quadrat or Scale on the Quadrant, wherein I shall first shew perpendiculare or direct knights by there Shadowes.

First, conuey the Left side of your quadrant towards the Sunne, the threade and plumet hauinge there free course movinge it up or downe, untill both ye Lightes haue rec'd the Sunne beames; Then if your thride be founde in the Quadrat of the Quadrant on 100. parts, The Shadowes of all things (beinge perpendiculare elevated) are equall with there bodies, And if the plumet with the thride be poreviewd to cutt the parts next to the Lightes, which I shall call right shadowes, then euery things direct or perpendicular is more then his shadow, by that proportion which 100. exceedeth ye parts where the thride was founde: And in fewe words, multiplye the Length of the shadowe by 100. and the product diuide by the parts in which you founde the thride, your quotient sheweth the light; but and if it be in the parts of contrary shadowes, augment the Length of the shadowe with the parts declared by the plumet, and the encrease diuide by 100. So cometh the altitude also;

Exsample.

In this figure it is plaine to be poreviewd. when the threade falleth on 100. parts the shadowe is equall with the thinge it selfe; In 50. of right shadowes it is but halfe, in 50. of Contrary it is twise the height: So to conclude, ye may see as the side in right shadowes exceedeth the parts, so doth the altitude or body the shadowe; and contrary in contrary shadowes, Beholde your figure how the threade cutteth 50. parts of contrary shadowes in the Quadrat next to the right hand; the shadowe BC, then beinge 210. foote; (multiplie as I haue said) the Length of the shadowe 210. foot with 50. parts cut by the threade it encreaseth 10500. which diuide by 100. ye Radius of ye Scale or Quadrat, the product is 105. The altitude of such a bodie which had a shadowe then 210. foote; Thus of all such like.

Proposition. 8.

Without Shadowe or any supputation by y.e Quadrant to take
hights approchabli.e

first lift up your Quadrant towards the thinge to be measured, lookinge diligently through both the sights, goinge backe or forward as occation is given untill ye see the toppe; for that your thrid or plummet fall iustly upon the 100. druition in y.e Quadrat of your Quadrant; Now if you measure y.e distance from you to the base (which base here I call the point directly under the Toppe of y.e thinge to be measured) then have you y.e right of y.e Steeple to y.e right poynt or base in light equall with your standinge; adioyninge unto it the light of y.e eye downwards; Exsample the lyne and plummet in the figure falleth precisely in the 100. druision of y.e Quadrat, the Space then beinge from you to y.e base, which is from C to A 70½ yards. To this you must adde the hoight of your eye (which here I imagine 15½ yards) so haue y.e 94. yards y.e true Altitude from A to B. As the Length of y.e corde from y.e eye to C declareth where you must beginne to lay the measure back.

The kinges most Excellent matie hemge informid of many great abuses offered to the nobility and gentry of this kingdome aswell by the sinister practise of certeine mechaniall tricesmen as painters, glasiers, stonecutters, carvers, and many other artisiers traclinge in armery who presuminge with out authoritie to intermedille with the marshallinge of armes, the erectinge of monuments wherein armes are to be fixed, coates quartered, due differences to be observed hemge misteries of hener and out of their element by reason whereof many great errors are dayly committed to the great offeme and prejudice of our auncient nobility and gentry of this kingdome and to the hredinge of many ambiguous doubts and questions with may happen in their discents and issues in future tymes, as allse by a generall neglect of the nobility and gentrye them selues in the emission of funerills and other ceremoniall rytes heretofore vsed with are now almost or altogether laid aside. For Remedy of with abuses and neglects his matie out of his princus and royall disposition so much tenoring the preseruation of the good estats of his said nobility and gentry of this kingdome esteminge them the principall pillars of this leame who in all former ages haue bene thought fitt to be distinguished from the vulgar and meaner sorte and ranke of people and thereby haue bene renowned throughout all christendome Hath comaunded us his comissioners for the office of the Erle marshall of England to take in to the aforesaid abuses and neglects wherevpon we the said his comissioners (vizt Edward Erle of worcester lord keeper of his maties priuy seale, Lodowik duke of Lenox, lord stewarde of his maties howsheld George marques of Buckingham, master of his maties horse Charles Erle of Nottingham, lord high admirall of England, William erle of Pembroke lord Chamberleine of his maties howshold and Thomas Erle of Arrundell hauinge taken due and consulerate deliberation of the premisses and findinge that by reason of the dayly abuses and neglects aforesaid that not onely his maties office but allsoe his officers of armes the kinges heralds and pursuants beinge officers of honor whose cheifest support and mayntename hath euer depended vpon the performance of the said funerall rytes and obsequies of the nobility and gentry of this land, takinge at all such tymes certificates of the matches issues and tymes of decease of the estates aforesaid with their armes with of right they ought to beare without wrongeoinge to any, and from whome his matie hereafterward will expect a more strict accompt then of late tyme hath bene had. By vertue therefore of his maties comission to us directed vnder the great seale of England bareinge date the seaventh day of februarye in the fiftenth yeare of his maties reigne of England France and Ireland and of scotland the one and fyftyth. Do order decree and ordayne that aswell for the good of the said nobility and gentry of this kingdome as otherwise, that from henceforth all noblemen barnets knightes esquiers and gentlemen of eminent place birth office and quality that shalbe either silently boburied in the night tyme by torchlight or otherwise by day or night without the attendance of an officer of armes shall nuerthelesse immediately after the death and buriall of euery such defunct returne a true certificate of the matches issues and tymes of decease with the armes with of right they bore for the with they shall pay into the said office of armes such fees as with haue and doe hereby sett downe and appoint: vizt Euery gent vsinge funerall scuthans at his buriall 2 li 3 s 6 d and vsinge none 2 — 2 — 0 — 0 Euery Esquier of coat armor 26 — 13 — 4 Euery knight 2 — 10 — 0 — 0 Euery Baronne and Barronitt 2 — 13 — 6 — 8 Euery Baron and Baronnes that ought to haue a great Bamer and Bamerolls 2 — 25 — 0 — 0 Euery Bishop 2 — 25 — 0 — 0 Euery vicount and vicountesse 2 — 30 — 0 — 0 Euery Erle and countesse 2 — 35 — 0 — 0 Euery marques and marchioness 2 to — 0 — 0 Euery Duke and duches 44 — 0 — 0 Euery Archbishops 2 — 44 — 0 — 0 All with said seuerall somes of monye are to be payed to the said officers of armes or their assignes, beinge orderly demanded after the buriall of euery such defunct by the heires executors or administrators of all and euery persons of the degrees afore said the with certificates and fees if they shall refuse to returne and paye we shall vpon complaint made by the officers of armes to us or to the erle marshall of England for the tyme beinge take such further order therein as shalbe thought mete and expedient for the accomplishment of his maties comandm. And further we the lords comissioners aforesaid do straightly charge and comaund all the said officers of armes with now are or hereafter shalbe to take a true certificate of the matches esues and tymes of decease of all the estates aforesaid with of right they ought to beare without wrong doinge to any they payinge such fees as are before sett downe by this presents and likwise the like certificate of gentlemen whose estates exceed not one thowsand markes to enter them as exactly as the rest payinge not fees at all with certificates ~~and fees~~ shall truly and carefully be registred and safely kept in a faire booke in the office of armes for euer, an autentique recorde with in future tymes may determyne and end many questions that hereafter may arise as by many examples of late tymes haue bene seene Prouided allways that if any of the inferior degrees aboue said (vizt knightes esquiers or gentlemen shall pretend pouerty or disabilety and shall make the same appere by petition vnto the erle marshall of England and his comissioners for the said office for the tyme beinge wch order shalbe taken therein as the ~~office~~ the gentlemen shalbe relieued and the office of armes satisfied Neuerthelesse if any of the degrees aforesaid shall require to haue their funeralls solemnished with heralds attendance and such other ceremonies as haue in former tymes bine vsed that then they shall pay all such fees as hereto fore haue bene accustomed. And for Remedy of the former gross abuses with are dayly committed by paynters that keepe open shops of armory and doe deuise and giue forth armes at their pleasure assuminge the names of heralds, paintrs for the more countenance therein: we do order likewise and will and in his maties name straightly charge and comand them and euery of them aswell within the citty of London as in all other cittyes and countries within this Realme that from hencefforth they presume not to paynt any armes vpon coaches, or elsewhere, or funerall works or to make or paint any discents or pedegrus or geue any trike of coates of armes out of their bookes and shopes for any of the estates aforesaid without the allowance and approbation of the kings of armes to whome it doth theirby appertaine. And for Remedy of such abuses as are comitted by masons which comonly make tombes and monuments and doe ingraue diuers armes and matches and set forth in their inscriptions, false geneologies with vaine and friuolous titles settinge vp coronetts vpon some vnfitting and impertinent to the qualityes of the person whome they de[illegible] of them by the imediate authority with we hold from [illegible] matie and

Ingraue or cause to be ingrauen painted or set forth any armes genealogies, Epitaphes or inscriptions or make any monument without it be first seine and allowed by the kinges and officers of armes whome it doth concerne the copye whereof with the forme of the monument to be drawne and entred into a booke, with booke shalbe called the booke of monuments and be kept in the office of armes for euer: to the end if euer afterward any thinge shoulde happen to be added or diminished or the monument translated or defaced as many are and haue bene yt the truth may appeare by the said register booke. And whereas wee are further aduertised that diuers glasiers, goldsmithes, cutters, grauers, and caruers, and other artificers, do vsually paint in glase, graue in mettall and cutt seales of armes carue in tymber and such like diuers armes, coates and crestes without any warrant or knowledge of the same to be true and iustefiable to the great wrange and preiudice of many auncyent fameleyes of this kingdome wee do hereby order likwise and in his maties name streightly charge and comand them and euery of them and all other artificers what soeuer to forbare to paint in glase cutt seales, or otherwise graue in mettall or carue in tymber or otherwise any matter of armory before the draught thereof be first seine and allowed by the kinges and officers of armes whome it shall concerne ~~the copyy whereof~~, vnles it be of the nobility whose coates and quarterings are eminent and well knowne or such of the auncient gentry as haue bine formerly vsed, approued and allowed by the prouinciall kinges of armes in their seuerall visitations within their prouinces Giuen vnder our hands and seales the tenth daye of Nouember in the sixtenth yeare of his maties reigne of England fraunce and Ireland and of Scotland fiftye twoo at whitehall. Anno Domini 1618

Exam^d^ & concordat cu original. test

Hen: St George Richmonde

Orders for ye burialle
of psons of quallitie
& for thestates fees

Articles of Treason and other great Misdemeanors Crimes offences
Done & committed by John Earle of Bristow against the Late Soveraigne
Lord King James of blessed memorie deceased and our Soveraigne
Lord the King Matie that now is vpheld by the said Earle as appeareth
by his Maties Attorney generall on his Maties behalfe in this most
high and Noble Court of Parliament before the King and his
Lords assembled.

1 That the said Earle being trusted and employed by the said late King as his Ambassador
Articles committed by him vnto Ferdinando then and now Emperor of Germany and vnto Philippe the Fourth
the Earle of Marshall before his Maties Councell then and now King of Spayne in the yeares of our Lord God 1621. 1622 & 1623 and
vnder his publique seales. Commission and Generall and absolute direction to treate with the said Emperor
and King of Spayne for the generall restoring of the Dominions Territories
and possessions of the Prince Palatine of Rhene vnto his marriage with the most excellent
Lady Elizabeth his now Royall Consort the onely daughter of the said late King James
wch were then wrongfully and injustice manner taken and possessed by the armes
of the said Emperor and King of Spayne or any of them and for procuring & obtaining
of the said Emperor and King of Spayne or any of them and not vnder then in any proportion of
any other parte thereof as were not then lost but vnder their power and obedience
vnto the said late King James To the preiudice of the said Prince Palatine and his
and for the restoring of the Electorall dignitie vnto the said Prince Palatine and his
Children and also to treate with the said King of Spayne for a marriage to be
had betweene the most Excellent Prince of Wales the
onely Sonne and heire apparant of the said King James and the
Soveraigne Lord and his most Illustrious Lady Donna Maria the Infanta of
Spayne Sister to the said now King of Spayne hee the said Earle contrary to his
Dutie allegiance and contrary to his trust and duties as Ambassador at Madrid
in the Kingdome of Spayne to advance and further the designes of the said
King of Spayne against our Soveraigne lord the King his Crowne and
and false wilfully and traytorously and as a Traytor to the said late
Soveraigne lord the King by sundry letters & other messages sent by the said Earle
from Madrid aforesaid in the yeares aforesaid vnto the said King James and his
Ministers of State in England did confidently & resolutely enforme advise and
assure the said late King James that the said Emperor and King of Spayne
would really fully and effectually make restitution and reparation of
to the said Prince Palatine and his Children of the said Dominions Territories
and possessions of the said Prince Palatine and of the said Electorall dignitie
and that the said King of Spayne did really fully and effectually intend
the said marriage betweene the said Lady his Sister and the said Prince vnto
and Soveraigne lorde according to certaine formes proponnded betweene the
said two Kings assented vnto by the said Emperor and King of Spayne or
either of them nobis vocatis intended such restitution aforesaid And the

1)

the said kinge of Spayne neuer really intended the said marriage nor did
the said Articles go forward But the said Earle and kinge of Spayne
intended only by those practises to gain time for compassinge their owne end
and purpose to the detriment of the kingdome Of all which the said
Earle of Bristoll neither was nor could be ignorant And the said Lady
kinge James by entertayninge those practises continuinge of them upon those false
assurances given unto him by the said Earle as aforesaide was made scorne
and lost the opportunity of time and thereby the said Commons transported to
possession of the said Count Palatine and the Electorall dignitie became
vtterly lost and some parte the rest were taken out of the actuall possession
of the said kinge James into those protection and safe keepinge they were gott
and Committed by the said Count Palatine And the said Count Palatine
and the said most excellent Lady Elizabeth his wife and children were vtterly
dispossessed and debarred from the true Discend of the said Lady
Soueraigne Lord kinge James to the discouragem of the said Lady kinge children
and their posterity of their immediat patrimony and to the disanimatinge and
discouraginge of the rest of the Princes of Germany and other kinges
and Princes in amitie and league with the said matie

2 That the said Earle of Bristoll beinge Ambassador for his said Lady matie
kinge James at aforesaide in the yeares aforesaide and Commaundinge secrett
report of playne and plaine instructions and directions from the said Lady matie
that he should put the said kinge of Spaine to speedy and punctuall answer touchinge the
treaties aforesaid, And the said Earle made pretences and effect of those instructions
and directions to gaine and obtaine time and taking upon him to doe
more then was commaunded and to obtaine the said Ladies matie to
put those treaties to speedy conclusion, but contrary to the said Earle faithfull
trust and duty of an
Ambassador did conclude those treaties upon dishonorable, perilous and dishonorable conditions
to the said kinge of Spayne with further concessions and promises then
the said Earle was directed to grant and contrary to the said Lady matie
expresse commaundm and direct concessions to the great dishonor of the said Lady matie and to the
great danger and detriment of the said matie Crowne and dominions of the said Realme and

2)

3 That the said Earle of Bristoll beinge Ambassador for the said Kinge Matie at the first
his landinge did openly declare to the said Kinge that he was sent
of Armes or Embassage in hostilitye but the said Kinge of Englande for
the good will he bare to the said Kinge Matie his dominions and
Kingdome hearkened after his private and secrett practises and
many other matters by words and letters to the said Kinge and his
Councell and gaue order to the said Earle of Englande to prouide
between him and the said Kinge of Englande affirmed and ratified
that if any Warre should ensue the said Kinge Matie his
subiects should neither to Lande nor hauke nor to take the
Earle of Bristoll did openly and publickly seeme to retaine the
Kinge to certaine his seruice an enmity to the said Kinge of Englande
of treachery and villanie the same abused him, or to resist the armes
of opportunity of time not to be recalled or regained to the dishonor
of the said Kinge Matie to the extreme danger and determinat of his Realme.

4 That the said Earle of Bristoll vpon the dissolue out of the Realme of Englande in the Embassage
aforesaid Lykinge commendacon which he did in London whyle the Realme of Englande before the
beinge into Spayne, in and about the Embassage aforesaid, concerninge the said treatye for the
negotiatinge whereof the said Earle was purposly sent And the said Earle beinge there
to the end that vnder colour of treatye that passe practises would or could haue succeede
the said Earle acknowledged as much yet neuertheless contrary to the duty allegiance
and contrary to the part and trust of an Ambassador the said affirmed that he could
not wish the same passe there were he sure could take place to haue the
effect and to further the same effectually how soeuer the busines went he would make the
best meanes thereby or that were possible all that in him to the effect whereby it plainly appeared
that the said Earle from the beginninge intended not the good and honor of the
Matie but the vtter and vtmost danger and determinat.

5 That from the beginninge of the negotiation throughout the whole manadginge thereof by the said
Earle of Bristoll in the Embassage the said Earle contrary to the part and duty
to god the true religion professed by the Church of Englande and the peace of the same state
and inward and resolue that if the said practises so treated of should be by the
ministers effected that thereby the Romish religion and professors there should be

3

dewaunce wth his Highnes Realme & other his Maties Realmes & Dominions & the true religion
of Xpe professed there restoured & disturbed, And to that end & purpose the said
Earle during the tyme aforesaid by Lres both his Matie & otherwise often tymes did
perswade the said late kinges Matie to sett at libtie the Jesuits & Preists of the Romish religion
notwithstanding the good religious & politike Lawes of his kingdome were imprisoned or
restrained, & to graunt & allowe both the Popishe & professed of the Romish religion theire
toleration, & silencinge of the all the Lawes made and standinge in force against them.

6 It did by the false Suggestions & subtelties of the said Earle of Bristoll during the
tyme aforesaid both of his said late Matie & to his Matie that now is bringe his Navie rownde
the said Realmes, and by the Assurance aforesaid given by the said Earle, his said late Matie
& his Navie was now ma^de bownde putt into decay, & the said longe delay used,
without procuringe any effect, whereby Matie bownde putt into Jeopardy & vtter subversion
that they were not able sufficiently to withstand any forreine invasion from the said Earle & his
Adherents & confederats & to the great perill & daunger both of his Maties Realmes &
our now gracious Soveraigne was disposed out of his love to his Subjects & Country to his Highnes
ffriends & confederats & to the peace of Xpendome, wch all suffered by him intollerable delaies
in his owne pson to undertake his longe & tedious Journey into Spayne that thereby he might
the sooner retourne wth speedy remedie wch they were not able to doe, the Earle replied That
Spaniards ought, they were no true men would interrupt the Emperours & Kinge of
Spaines Realmes, they was no time then to bringe the same to conclusion upon any
fitt & honorable termes & condicons & absolutely & speedily But that he & the rest of the
p^sons of the said Navie bringe upon their apparant ruine & destruccon of his Realme
& in his p^son the p^sons and estates of his Subjects would not & refused they
& yet stay & imediately & daunger both all the condemnacons of their parts of all good
Subiects doe abhorr & tremble.

7 It did alsoe the Navie remaine in Spayne during the tyme aforesaid the said Earle
of Bristoll & his complices falsly & traiterously moved & perswaded the Navie (being the
chiefe power & strength of the Realme & the Romish religion) to depart from their religion
wch they were done in this manner, All the Navie first comings to the said Earle &
desired the Navie for most part to stay there & the Navie all first not regarding
the Earles motions answered, yet then at last they the Earle replied That they
knew how strong their masters industrious, although they might do as farr[illegible]
unlesse they knew their meaninge fully, which was not lawfull for them to doe yett

dissents dont committed by the said Earle during the tyme of the Armado being in Spaine

the Lay in the Towne of the Rayne of the Comings, That he meant to change his religion
& to forsake his God & yet redinghi to distruse it. the Earle Wood answer Sr Edw
not spoke his full & will resolved he to doe it or his full & will amiss he his full & will
follow of Englishe thinge he will doe it. But do his faithfull Ambassadour if he will
trust me into his privie counsell I will discouer to him the practises that
I heard the Duke of Norfolke moued all this enterprise against the Queene
Wonder wisely he should vnderstande me not, that he should commit so base or vnworthie lie for a prince to change my religion the said Earle replied
I said the Prince to doe him if he should vnderstande me. he might but out of his doubt
to serue him we persuasion of the said Earle was he more dangerous because he
more subtile wherby he might drawe the Duke of Norfolke faithfull Ambassadour to God &
me if he found the Prince staggering in his religion to serue & would so profit
an error & to serue I added against he so to serue I would the dangerous
consequences of the true religion & to his State if Princes should
serue Sathan

8. That afterwards coming the Prince into Spayne the said Earle should
confirme the Prince about the Romish religion he vnderstood
false & trailerous to Englande the Prince to change his religion he answered
terme Romish Papistike, to which obtained to the assigned authority of the Pope
of Rome & to that end & purpose the said Earle trailerously vsed his
words vnto the said Prince That the State of Englande did now raine great
hurt vnder the gouernment of the Pope of Rome & that it was
impossible they could doe any Princes good vnless

9 That coming the time of the Prince into Spaine he answered the Prince
consulting & advising with the said Earle & about a new offer made by
the King of Spaine touching the Palatinate with which that the eldest sonne
of the Prince Palatinate should marry with the Emperors daughter but must be
bred the in the Emperors Court, The said Earle declared his opinion that the
Question was religious, vnderstood vnder Sr Walter Aston the present
Embassadour into Spaine question said that he durst not for his life counsell either
the Earle of Bristol replied, that he saw no thing greater inconvenience vnless,

5)

for yᵗ yᵗ myght be bred vpp in ye Emperors howse in yᵉ true religion, But vppon yᵉ extreme
daunger & imminent hazard ye impossibility appeares vnto yᵉ said Earle ye said
presumed that without some such great acte the peace of Christendome could neuer be had,
nor vnto so dangerous & desperate a downfall but one so neere to ye throne
of England should be pressed vnto yᵉ religion & putt into ye power of a forrein
prince & to ye religion & an enemie to ye state both for ye consequence yᵉ
both for yᵉ present & future tymes were manifestlie dangerous & ought preuented
and yᵉ difference to our religion ye blindnes in yᵉ iudgmᵗ imputed by Christes
reporte & the small regard ye yᵉ had to ye losse of Christes state & him.

10 Yᵗ vppon ye premisses yᵉ said Earle found himselfe & yᵉ matter
offences done & committed by ye said Earle after ye premises coming from Spayne. resolued deluded to returne from ye Court of Spayne & yᵉ vertuous & vngrounded
him to ye fairlie & leaue ye power of ye dispensacions
Bristoll to be deliuᵈ vpon ye returne of ye dispensacion from Rome wᶜʰ ye
time of Spaine insisted vpon & without wᶜʰ ad yᵉ yᵉ said Earle yᵉ would not returne
ye marriage & ye Prince forthcoming & therupon left after ye dispensacion ye
infanta wᶜʰ should vppon be yᵉ prince might be putt into ye Monastery yᵗ neere a
better harbe to ye said Earle from Segouia vppon yᵉ comaundmᵗ him not to make
yᵉ powers, untill ye could giue him assurance yᵗ ye monastery might not robb yᵉ
of yᵉ prince wᶜʰ yᵉ said Earle ordred & wᶜʰ should returned duchesse
of Burbon into England & thence into yᵉ dominions yᵉ Emperor vppon
of Burbon: Secondlie after wᶜʰ ye premisses sent another post to ye said Earle
with Spaine discharging him of yᵉ same commaund but yᵉ like matter
by ye same messenger sent him a more expresse direction not to dissolue ye
dispensacion untill a full conclusion were had of ye other treaties of ye
Matrimonie together wᶜʰ yᵉ yᵉ marriage for yᵉ Mᵗʸ said yᵗ ye would
not shew one daughter to Lewis then Prince of Spayne vppon wᶜʰ
In wᶜʰ dispatch although ye were some mistakinge yᵗ in ye wch followinge ye same
yᵉ receiued and ye Earle of Bristoll did not to yᵉ aforesaid instrument wᶜʰ
him selfe confesseth in one of his dispatches afterwards sent & must here obey ye matter allie
to Kinges commaund hereunto yᵗ nothinge contrary to yᵉ duty & allegiance

[illegible] anoyer the seute interlutor after ye delaroe hyll ye ysid sett a day for ye ~~dysposicion~~ disposicion
endyght anno assyntement or ellys ye partyes ab treatinge of hyll pes with ye
to him ab wsurpyng ye hall in so fort a day that is extraordinary diligence wt yat
sworell yi ye viscont ysid not rendred ye prisnr ysid wtyll ysid bill bound by
ye ye wrid serve of Appiss nor ye prisnr valut: of and restaured nor dew
assurance given of ye temporalle Erlde cll wt yi ysb ye presumpcion ye
Abbot to do longe ten expresse bndes of ysb Justenrond And is for sand ysid
not bine perbrubed by ysb late Mat. vigilancye it myght yeue turned to ye prfuice
ye ysb ye ysid ye ysb Mat.

Item that ye ysid offerd yi a sure ten rembrancer wherin prferryng a stedfast
petition to ye ysb. Counsle to ye dyscussion of ysb Mat. of blyssed memory declared ysb
ysb sond Mat. that now ib wt ten no wan stabrelle in Scotland to yelde
ysb Sadeyne And yi our Article of that petition especially regarni ye proth ysb non
plus ye lyst in denying ye offering to falsifie that reason wt ysb Mat. affirmed
by yerbuts added plus hyll of ysb oven remembrand to bot Counsle of
Parliament.

7

Articles of Impeachment
against Lord Earl of Clarendon

The Kings answere to the Apostletike petition of the Conte of Comerd
assented to the Kinge by advyse of the mynistre of the Conte by their direction

We must first determine in the same sorte that we would have done it, if the petition had come to our hande before we had made a ton herebosch with the Kinge of Englande concerninge the treaty of Commerce and other matters betwene the two Realmes, which is to repeate the first worde of the late Embassade to the Kinge. That is Letatum [illegible] Hyeronam arrestminde after we had treate vpon the first instructions geaven vnto vs by the Conte of Comerd for the recouerie of the Conte moneye, more at large touched not only the proclamation of the Kinge concerninge our restreynte but also the labours we take for the satisfaction of the Conte, in these three articles recommended vnto vs in their name by the right honorable Chancellor of Cantorbury: And likewise for the good entertaynment of Englande we are moued in gaue vs the request. But moste of all we haue had regarde vnto the daunger of Rebellion in this Kingdome tacitely implyinge our misgouernement in this poynt. And we haue had to finde reasone why it be not dutie for the reformation of people so to dispose their gouernment regarded by the contrary it is our dutie in all prudencie to finde more and more a dutifull and thankefull hart in the people hereby to drawe them from their Apologie vpon toy vs in sundrie formes of true dealinge of vnderstand reporte and false informations concerninge the Conte. Not only in remembrance that we are an olde and an experienced Kinge mindful of our honour, but in our consciences of our first almes before the Kinge of Kinges in our vocation of the Conte moneye not to Rob him: For first we esteme to giue vnto vs the

[illegible]

Ad not be fittinge hir highnes to their fancies; And if they had done otherwise they would have
thought it a hinderance in them; Endes their doyng we may doe in such a cause
hainge made a publique declaration allready, as we say before directly contrary to y^t
wch ye have nowe undertioned. Also in this poynt of ye petition whereby ye desire an
answere ad apply holdinge to a playnedut. The first and greatest poynt in that
of religion concerninge wch at this time we can finde ye no other answere then
this in the generall wch is that you may rest assured that we will neuer be weary
to doe all that we can for the exaltation of the religion and reformacion of poperye);
but the manner and forme y^t must vomitt to the care and prudence, whoe can best consider
of time and seasones, not by undertakinge a publique warre of religion throughout all
the world at once, wch howe hard and dangerous a taske it would prove it y^e
may iudge. But this puts me in minde howe all the world the last yeare complayned
of plenty of corne, and god hathe sent us a reckninge cause this yeare for the heate. And
howe many god that this desire amongst y^e of kindlinge watred shouninge ye warmed
of yeare and plenty may not make god vnwitt us to fall into the miseries of both:
But we allreadie said that the care of religion must be such as on the one yet we
must not by the light perswasion of Recusants at whome irritate forwardnes proceed
of contrary religion and teache them the way to plague the protestants in their dominions
whome wch we daylie intreated at this time principally for ease of the profession of lord
under yet vpon the other side we neuer meane to spare from seuere and punishment
of any papist that will proue insolent for liuinge vnder so milde gouernment; And if may
also be added we will leaue nowe vndertaken already for the good education
of the youth at whome especially for the children of papists, and also for preuentinge
at all times hereafter that are or shalbe abroade from beinge bred in dangerous
places and so possessed in popish seminaryes: And as for this poynt touchinge
the good education of popish youth at whome, we haue taken some good proofe
both in this kingdome and in Ireland: So will we be pleased to passe and good lawes
that shalbe made either nowe or at any time hereafter to this purpose: To y^e
request of makinge this a Session before Christmas as is formerr and grantinge
a generall pdon, it shalbe in ye default if we make it not before Christmas as is
for mr Lord we noticied vnto y^t: But for the pdon we craue such priuiledge in it
we must be well aduised vpon it, least otherwise we finde y^t harte the double or treble
of it we are to render by ye statute subsidie: But the ordinary course we hold
fittest to be vsed in that case: wch is if we should of the first grant send downe
a pdon from the highest houses conteyninge such poynts as we shall thinke fittest
whereon whereon we hoope it shall receiue good satisfaction: But we cannot omitt
to howe ye howe strange we thinke it y^t should mate so bold and minde a domestary
vpon some wordes of the former lre as if we meant to restrayne ye liberty of
tenuriant priuiledges and libertyes in Parliament Surely a scholler would be ashamed
so to misplace and misiudge any sentence in an ordinarie booke for whereat
in this sore and of the former lre we dischargd ye to meddle wth matters of
gouernment or ministred of state cannot wth meetnes of nature or peace or the
dearest sonnes match wth Spayne by wch getinedar dominations we interpett

Of my thinke concerninge the matche of Scotte some but only to tell yr opinions
and lay it downe at yr feete first we desire to knowe howe you could determine
in that poynt wthout committinge high treason And next yr cannot deny but yr
talkinge of his matche after that manner is a direct breakinge of yr commandment
and declaration out of yr owne mouth yat the first settinge downe of this element
whereon we playnely ffound that we were intreated of his matche wch Spayne
and wished yr to have that consideracon of ye religion and wisdome that we
would so maintayne it as ye religion should have noe prejudice by it: And the
same we nowe repeate agayne vnto yr ffessinge that we are so farre
ingaged in that matche yat we cannot in honor goe backe, except the kinge of
Spayne reforme not such thinges as we oppose at his hands: And therefore
we are sorry that yr should showe to have so greate distrust in vs, or so courdine
that we should in religion, otherwise we cannot matche here & former publique
declaration should not have stopped yr mouthes in this poynt: And as to yr request
that we would nowe ordeine yr former motions, we wonder howe that could make yr ffeare that
we would nowe ordeine it, wherein formerly we playnely declared the contrary vnto yr
And therefore we have in this reiected that suite of yrs, for what we have lately negotiated
in the highest poynte of soueraignitie, that motion of yrs except the strictenes of Spayne
for it contayned the violation of Leagues, the particular wherin howe to ordeine a course
And the marriage of ye Scottish some both negatiue of Spayne, now
other Popish wardes, And also aforesaid the matchinge wth one of ye religion
both we confesse it a straynd beyond any precedent or wisdome yat hath ordeined vs at this
nowe stand: Those are secrett thinges to be handled in parlament except yr
should require it of yr: ffor who can have wisdome to iudge of thinges of yt nature
but such as are daylie acquainted wth the particulars of treatyes, and the continuable
or fixed resolution of estates, to gether wth the knowledge of the secret
wayes, ends and intentions of Princes in their generall negotiacons, otherwise a
small mistakinge in matters of this nature may prejudice more then can be
mayended and therefore ne sutor vltra crepidem. And besides these intermedlinges in
parlament of matters of peace or warre and marriage of ye Scottish some, would be such
a diminution to yr and to ye Crowne in forraine Countries as would make any prince not
to treate wth vs either in matters of peace or marriage, except they might be assured
by the assent of parlament, And so it could longe agree wth a kinge of Straunge
some vpon a trifle prejudice his estates to dissent from treaty; wch before he had made
was after refused treatinge wth princes to his greate reproach vnles he would first
crave the assent of their estates in their creation: And will yr take ye eyes vpon
the late times, yr shall finde that the late Queene of famous memory humbly
petitioned her parlament to be pleased to marry: but her answere was that she
liked their petition well because it was simple not limitinge her to marry one

Et habent sine scaram extra ecclam

Et dicit quod Thome Nicoll [illegible]

That we will labowre by all meanes possible either by treaty or by force to restore & Childrine to their auncient dignities and inheritances. And whatsoever Christian prince or potentates will not them selves aryse against yt we will not spare by any lawfull meanes to bringe it so inyt and honble pmysse to good ende. Whether shall the matters & some or any other worthy respect be offered to this & resolution: first of all the treaties and intermixture of the kinge of Spayne and the Archduches and sithens (now wth god) we observed the lower Palatinate one whole yeare from any further conquestes in wch time divers yeares might easily have allowed vs by Cypriotes armes without any resistance and in noe better sorte was it now at the Embassade the lord digbies cominge through Heidelberge. if he had not extraordinarily furthered it; But betweene we come yt ye mixture the warr in the Palatinate wth the cause of Religion. we must a little unfolde ye first grounde; The beginninge of that miserable warre (wch hath set all Christendome on fire) was not for religion but only caused by some in Bohem, their harsh and hastie resolution following evill counsell to take to himselfe the crowne of Bohemia: And if it be true himselfe wrote letters unto the at ye time desiringe yt, to give assurance both of the French kinge and state of course if his accepting of the Crowne of Bohemia) had no reference to the cause of Religion but only because of his right by election as he pretended it; And we would be sorry if any aforesayd should rome upon a religion as to make it a good pretext the destroyinge of kinge and destroyinge their Crownes; And we would be sorry people here should be taught that doctrin. Let us not take the Jesuites so farre as to ask them of their secrete positions and practizes yt poynt; And upon that we assume & believe so favr of ye Charitable thoughts of us yt we would never constantly have denied & some in Bohem both the title and assurance in that poynt; if we had been well assured of the Justice of his quarell. But to conclude this poynt that punishe exploration of the Crowne of Bohemia and Humgaria. for the Emperor hath given too large a grounde and opened him too wide a gate for the murdringe and oppressinge of many thousande of the religion in diverse pts of Christendome. And whereas ye desired touchinge upon the kinge of Spayne upon the oration of the imbassadr by ye interpreted in that place; And affirmed that it is without any touche of his honr; we cannot wonder thought if ye are so forgetfull both of yr worde and witte for in yr former motion ye plainly affirmed yt he affecteth the temporall monarchy of the whole earthly; then wch ther can be no greater malice uttered against any greate kinge, to make all other princes and potentates both envie and hate him. But as it list it may easily be tryed whether that speech touch him in honr or not; as ye shall ask him that question whether he meane to assume to him selfe yt title or no, for every kinge can best judge of his owne honr; we omitt that particular enarration of some fowle mouthed orator in ye house against the honr of his Crowne and estate; And touchinge yr desire not determininge

Item quinq; vacc. & unc' mr. j. acr' agnorum De Gsthall
Et albinet' sine focar' cum gtra anstum

Et xpte croft. & di acr' Thome Nicott Jun' & xpte croft

Consernynge the matter of the dearest some wth some protestant, we cannot serv Primerly,
for we knowe none of those fitt for ymi. And desyrade the stream of this matter wth Spayne
hereafter doth to the plentie ware wth the kinge. And yet in the conclusion for soothe ye protestt
ye intended not to presse upon the most undoubted and Royall Prerogative: the rest of the
the cause matters of ye Scotish confesse ymongst not to meddle wth, were not amedlinge wth them.
And wherefore ye extend ye power unto the Lords to give counsell by their seuerall oth. their Lorde
yet by so much as ye Scotish make recourse of their severall voteinge may be concluded, but
that doe were resolved they more to restrayne the Palatinate. if otherwise not could not attayne
unto it. And ye rather limited to advise forthwth upon a speedy) beginninge the warre in the
Palatinate from disbandinge. And to foresee the means for the raysinge and mayntayninge
of an armie of 4 score thousand against the spring. How regard is forward rather made upon the
that therfore we must of force) devolved ware against the kinge of Spayne
bedake our dearest sonnes matter. and matter to one of Religion, for the world findes
The difference is no greater then as if we would tell a marrigant he had greate
neede to borrowe money from ymi, for raysinge an armie, that thereupon it should
followe if not were bound to followe his advise in the directions of the warre
and all thinge dependinge therupon; But yet not contentinge, ye seeme wth his grace
of ye warre indeede cannot hold water) ye come after to a direct contradiction of
of the conclusion of ye former petition, sayenge if the go and safety of the
ye Spirituall and the patrimony of the Children invaded and possessed by the
the wellfare of Religion, and state of the kingdome are matters at anytime not
profitt for ye deepest consideration in Parliament. To this generalitie we answere
wth the Scottish, that we are all thinge are contayned nothinge is omitted. So if this clause
potentia of ye in deede ye in all power upon earth lackinge nothinge but the Pope to grant
the rest also of Heaven and Prerogative. And to this last generallity of ye we can give no other
answere then this for we will trouble all the best lawyers in the house to make a good
Commentary upon. For so did the puritan ministers in Scotland, bringe all kinde of causes
within the compasse of ye Jurisdiction: sayenge if it was the Synode office to judge of
slander, and there could no kinde of Crime or fault be committed. but if there was
a slander in it, either against God the kinge, or their mingelmood. And by this meanes
they hoped in to themselves the remissarie of all causes for like Bellermines distinction
of the Popes power in order all kinge in ordine, Spiritualline, regarding ye gives them all
temporall Jurisdiction over them: But to give an direct answere to the matter
of the warre for we see ye are so earnest, we confesse if we rather expected ye
should gave ymen ye greate and hartie thanker for the so longe mayntayninge
a settled peace in all our dominions: when all our neighbors about us are in
a miserable combustion of warre but Later Bellum in expertis: And we indeede
finde by experiance if a number of subiects are so pampered wth peace,
as they are desirous of change thoughe they knowe not what; If it be true if we have
ouer offended. And in yt minde wth gode grace we will live and dye

Jte quinq; vad. erat mot. j. acr. apud Estfall de Estfall ppte crucis. et di acr. Thome Nicott jacent ppte orientem
Et abbatis sup foream gtra austrum

And restrayne ye former wordes and thos towardes the ende of ye lre we forbid yu
to medle wth such thinges as hang thos ordinary course in instid wherb ye may
together those two sentences lyenge same assunder and playnely leave out thos
wordes of ministeris and of state so as ye ar A bene deuise ad mala Coniuncta for
of the former yete construyng ministeris of state wo playnely restrayned & meaninge
to the ytirduarb that we ar after mencned and in the latter ende we confesse
by the Edward Doth solisly buisonesse thoin hoadb be it arrused of were before
ye meetinge assented sente to, and we hand settled a lotall forme of proedinge
therein and therfore it had well becom hime especially beinge ye seruante
and one of ye Counsell if hee had any thinge ayaynst it to hand remayned
to sot wth ye rather did thoughe he wab ordinarily at ye Courte since it
time and neuer had arrese refused unto hime And allthough we cannot allowe
of the still calinge it ye auntyent and undoubted right and inheritance; but
could rather hand wished that yee had said that ye priuiledge we deriued from
the yeare and permission of ye auncste and not for most of them growe from
ye Crowne wth Crowne rather a tolleration then an inheritance Yet we ar pleased
to yime ye ye royall assurance that alonge as we shall continue to contayne
ye selues wthin the limitte of yr duty: and resport to us as our -
selfe ye will doe wee ye owne royall prerogatiue; so as ye hense shall
neede to beware to trench wpon the prerogatiue of the Crowne
inward or any iust time, to restrayne them of thoin priuiledges yat we
ye prerogatiue and followers of the Crowne, But of that we goode thoin shall
rest be ranste yeare And to conclude since we hand more plainly expressed
the cause concerninge ye meaninge unto yu to yee on Wherefully and ofte all
conuenient dilligence for preparinge such good lawes for us to passe at this time.
as the people may see the yeare that both we and ye hand for the good yonder ment
of the Kingdome endinge as we did in ye former letter ist there be not an
vpper session made at this time it shalbe in yr defaulte. And above all beware
by yr wanwardnes at this time to giue ye Spaniards and Scottes cause to insulte
and thom: The Rumor that shall be spread abroad of a distraction betweene us
and ye people wherein we as the rest stonding lady at ye Courte at Newmarket
the seaventy day of December 1601.

Te qnigr vob. Et ac mr̃ J. ac. axuery de Esthall ꝑte ead. & Ri ac. Thome Nicoll Jud ꝑte eor.
Et abbiat fiat fozaram gtra anstey

The kings answer to ye petition of ye house of Comons
presented vnto him att Newmarkett — xi° 62 i

Terrarum terrar' Ecclie Be... ... terre multe ... subtracte et amisse fuerant p[er] negligen...
Rector' et desertu[m] terrarum. Nam ... in qua ista intitulacio ... nulla terrarum de dictis inveni... ter...
convocatis senioribus parochie et longa inquisicione fact' ... terras dict' Ecclie licet non ad plenu[m]
recollegit. Indempnitati quoque Ecclie predict' prefatus ... Thomas condolens et consulens utile censuit p[re]dict'
terras hic intitulandas ne in tantu[m] Ecclie dispendiu[m] a mentibus hom[inum] que labiles sunt facile de cetero evellerentur.
Hortor quoque successores meos ut terras in quarum noticia ipse dedi... inquirend' ipsi studeant investigare. Et pro hoc labore
Ecclie ut arbitror satis utili me deo suis sanctis precibus intuitu caritatis recomendari. De terris infrascriptis Ecclia possessa
est die confectionis presencium

Mykylbergh. Ibidem x acr' id est ij acr' in latitudine iacent in quinque quarentenis inter campum de Methelwold ex parte bor' Et capit'
occid' abbutt' sup' terr' Abbatis de Wendelyng Et caput orient' extendit se in bruera
Et sciend' est q[uod] racione predict' pecie terre Rector dict' Ecclie habet libertatem unius ffalde Et unum cursum in bruera
cum ovibus suis. qui quidem cursus extendit se oblique a dictis ij acr' usque ad veterem lodgeam.
Item ij acr' et iacet ex parte boriali terr' Willi Yong et ex parte austr' terr' Ade Vinsett Et caput orient' abbutt' sup'
Wreynstye Et caput occid' abbutt' sup' terras de villinagio dni Epi
Item j acr' et iacet ex parte austr' terre Osberti Mundesford Et ex parte boriali terr' Joh Barbor Et caput occid'
abbutt' sup' Dichegate
Item di' acr' et iacet ex parte austr' di' acr' de villinag' dni Epi et ex parte boriali terr' de Esthalle. Et caput
orient' abbutt' sup' Dichegate
Item di' acr' in le Seele et iacet ex parte austr' di' acr' Joh Passele quondam Katerine Plume

It' j acr' et iacet inter ij rod' Roberti Bysshoppe de villinag' Suthhalle ex parte boriali. Et caput occid' abbutt' sup'
Sparkshevedlonde alias Sprynkshedlonde Et caput orient' abbutt' sup' Puddellewonge
It' j acr' i' di' acr' iacens in ij quarentenis ex parte occid' de Wallam ... Et caput boriale abbutt' sup' j acr'
de Esthalle
It' ij acr' et iac' ex parte boriali terre villinag' dni Epi Et ex parte austr' terr'
Et caput orient' sup' via ducente ab Ecclia Sci Michi usque Methelwoldhythe
It' j rod' et di' et iac' ex parte austr' terr' Capryes et ex parte boriali Et caput orient'
abbutt' sup' via p[re]d' supradict'
It' di' acr' et iac' ex parte austr' terr' Esthall Et caput orient' abbutt' sup' j rod' terr' Ecclie Sci Michi

It' j acr' i' di' acr' iacens in ij quarentenis ex parte austr' terr' de Esthall et ex parte boriali terr' de Suthhall
in una quarentena Et caput occid' abbutt' sup' ij acr' p[re]d' infrascript'
It' ij acr' et iac' inter terram de Esthalle ex utraque parte Et caput occid' abbutt' sup' quinque rod' Barett
It' di' acr' et iac' ex parte boriali terr' Joh Pathn et ex parte austr' di' acr' de terris Norpte Et caput orient'
abbutt' sup' terr' Ecclie Sci Michi

... hec loca p[er] quibus ... hertelhwe ... inquir'

Item apud le Netehowse ij acr' et iac' inter j rod' quondam Cowteshales ex parte orient' et inter terr'
ex parte occid' Et abbutt' sup' forar' vocat' Cowteshales hevedlond' . cont' austru[m]
It' di' acr' et abbutt' sup' Walters Weye cont' orient' Et iac' inter j acr' Joh Stalleworthye ex parte austr'
et terr' Joh Wrigth ex parte aquil'
It' j acr' et di' Et iac' inter terram donat' Ecclie S' Georgij ad inveniend' cereos ibm vocat' ... ex parte
Et abbutt' sup' Walters Weye cont' orient'
It' ij acr' i' una acr' iacens in ij quarentenis inter terr' Prioris de Wlevesholme vocat' ... hevedlond' ex parte occid'
Et abbutt' sup' terr' eiusdem Prioris cont' austru[m]
It' di' acr' et ptransit Eglynes path et iac' inter terr' Prioris de Wlevesholme ex parte occid' et terr' Simeonis
Bacheroftе ex parte orient' Et caput austr' abbutt' sup' terr' Rici Rimbolde
It' quinque rod' et iac' inter j acr' Manerij de Esthall ex parte occid' et di' acr' Thome Nicoll ... ex parte orient'
Et abbutt' sup' foreram contra austru[m]

Item j rod & di. & iac mes Rodemed ex parte orient & mes j acr & di Johis Wrigth De hyth ex parte occid
Et abbutt sup foceram qt. Anstin
Item j rod & di. & iac mes. m. rod Thome Rachearst quonda Cmitones ex pte occid. & j acr & di Joh Wrigth
supradict ex parte orient Et capit abbutt sup terras vocat Cmitones
Et capit orient
Item di ac. & iac mes. m. rod Rā Crofts ex pte austr. &
abbutt sup foceram predict Rā Et capit occid abbutt sup Dalterysheye.
Cmi xxxj acr j rod & di rod

Markehyll
Ibidm. m. iacent simt mt terr de Esthall ex utraq; pte. quar tum acrar una q; tendit p dnas quarentenas
altera p una. & pt transemit viam Ducente ad aynlesdell Et capit occid abbutt sup foceram de villmar d. Epi
Item j rod & di. & pt transemit via predict & iac ex parte occid terr voc Barretts & ex pte orient terr quond Colvtes
Et capit boriat abbutt sup foceram Ecclie Scti Nichi
Item j rod & di. pt transemit via predict. & iac ex parte occid terr quond Colvtes predict. & ex parte orient
terr ayathie Elyse. & abbutt sup foceram pd supradict
Item j rod & di apud Vlnesholme. & iac ex parte austr terr quodam Colvtesh. & ex pte boriali terr Thome
Trigge. Et capit occid abbutt sup foceram de villmar dm Epi
Item. j acr. & simt foceri iacent ex pte occid terr de Esthall Et capit boriat abbutt sup Vlnesholme ayerd
Et capit austr abbutt sup foceram quond Camcelles
Item j acr. & iac ex parte occid terr de Esthall. & ex pte orient terr quond Shyknys. Et capit austr abbutt
sup m. acr de Esthall Et capit boriat abbutt sup foceram Nichi Toeye
Item di acr. & iac ex pte occid terr quond Colvtesh. & ex pte orient & acr exterti aynndesforde quond Rolti ii.s ij.d
Et capit austr abbutt sup dmsa ayomalm de Thetforde Et capit boriat sup foceram Nichi Toneye
Cmi vij acr & di acr & di rod

Estfeldepna
Ibidm di acr. & iacet ex pte occid vmg acr Ecclie Scti Nichi. & ex pte orient di acr de villmar dm Epi. Et
abbutt sup Elynyate qt. Anstin.
Item vj rod. & iac ex pte occid j rod & di Joh Trigge. & ex pte orien di acr quond Colvtesh. Et capit austr
abbutt sup viam pd predict
Item di acr. & iac ex pte occid j rod & di Rā yongr. & ex pte orient terr quodam Copyes. Et capit austrl
abbutt sup Sirt vj rod Et capit boriat abbutt sup foceram quond Colvtes
Item. j acr. & iac mes terr mgr iohis estclyve ex pte occ, et m ac mgr willmi eschelyve ex pte or Et capit austr
abbutt sup viam supradict. & capit boriat abbutt sup foceram
Item. m. rod. & iac mes j acr quond Colvtesshal ex pte aquil. & terr
orient abbutt m anglo duar acrar supradict Et capit occid abbutt sup. j. acr de villmar dm Epi
Item. j. acr. & una ac iacens m. mj quarentenis. Et iac ex pte austr terr Ecclie Scti Nichi. Et ex parte bor
terr Johis Gathin quodam Grayes. Et i fine occid parvi tendit se vltra Shreynstye
Item di ac. & iac ex parte boriat. m. rod de villmar dm Epi. & ex pte austr Et
capit occid abbutt sup terr Abbatis de Wendelyng Et pt orient abbutt sup terr Copyes.
Cmi x acr

Ibidm j rod. & iac ex pte orient vie vocat le Assh weye tend Shreynstye Et capit boriat abbutt sup. ij.
acr dm Epi Et capit austr sup vj rod de villmar di Epi.
Item di acr. & pt transit Porter gate weye. & iac mes. ij. di acr exterti aynndesford ex utraq; pte. Et abbutt
sup terr de Esthall q austrm Et ista di acr habet exterti aynndesford ex cambio p di ac iac ex pte
occid terr Johis Belwys quond &c. Et abbutt sup boriam dm Epi q Bovtany l.
Item j via acr pt transiens viam ducens a le Asshe vs Threholdes. & iac ex pte occid terr abbatis de Wendelyng
& ex parte orient terr de villmar dm Epi Et capit bor abbutt sup foceram quond Camcelles
Item di acr pt transiens eandem viam, Et iac ex pte occid boriali vmg acr ecclie Scti Nichi, et ex pte orien
australi vmg acr Johis Trigge de villmar ex pte Et capit occ abbutt sup viam quond pd, et capit or
austr abbutt sup viam pd. Item di acr iac ex pte occ boriali quond pd Johis ac et ex pte or australi quond Johis
ex parte aq abbutt Rasell, et capit boriat abbutt Rasell.
Item j rod iac ex pte austr di acr quond Rolti & ex pte boriali vmg acr emp Johis of Belyng

Item j acr jac ex di. & q rod iacr in naby quarentenis. et di perva, et iacr ex pte austr
Johis de Esthall in quarentena occ, et abbutt sup le Wonyst ostentit versus in mortiagiat

• Ste j. acr ꝑtransien ꝑ portegate.
Et capit Anstid abb. [illegible] ing acr de Dellmay Suthhall ⁊ ep̃ ꝑte orient
[illegible] de Suthhall
• Ste j rod ⁊ di ꝑtransedtes via ꝑ ꝑd. [illegible] orient terr quonda Capeyes Et capit anstrat abbatis
sinz Thrichowedwong Et capit boriat abbatis sinz terr dñi Epi
• Ste vj. rod ꝑtransemt via ꝑ ꝑdict. ⁊ iac ep̃ ꝑte ocid̃ ⁊ acr Robti Stalon. ⁊ ep̃ ꝑte orient. ij. rod Osberti
chymdesord Et capit anstid abbatis sinz terr dict Osberti vocat Cloxenholde
• Item j acr iac in furrow inter terr ead̃ abbis ex ꝑte austr et terr occupat ꝑ Romsey ex ꝑte
ꝑte bor, et cap ead̃ abb sinz le gravell pitte, et cap ead̃ abb sinz regiam viam /.

Suthfelde • Ibidm ij. rod ⁊ di acr iac in una quarentena ⁊ di. ep̃ ꝑte anstid j acr ⁊ di de Esthall. ⁊ ep̃ ꝑte boriat terr
Roberti Stalon ⁊ una quarentena ⁊ terr quonda Barrett ⁊ di quarentena. Et capit orient abbatis sinz terr
natiua dñi Epi. ⁊ sinz prat Ecclie Wē ayarie sinꝑdict q̃ ocid̃
• Ste di acr. ⁊ iac ep̃ ꝑte boriat di acr de Russell. ⁊ ep̃ ꝑte anstid di acr de Villmay Suthhall. Et capit
ocid̃ abbatis sinz marisc̃
• Ste apud Holmed ij. rod quie sint forera. ⁊ iac ep̃ ꝑte anstid terr de Esthall. Et capit orient abbatis sinz forera
de Villmay dñi Epi Et capit ocid̃ sinz forera Roberti Stalon Wattr Gerrell aad.
• Ste j acr. ⁊ iac ep̃ ꝑte orient vj rod de Esthall Et abbatis sinz ij. rod predict q̃ boscū Et sinz di acr
Ecclie Wē ayarie predict ⁊ di acr Osberti Aymdesord q̃ anstrū
• Ste apud Wilton dyd ij acr ꝑ ꝑb̃ imparat ⁊ ad pratū.

• Ste di acr. ⁊ iac ep̃ parte orient ꝑdict vj rod de Esthall. ⁊ ep̃ ꝑte ocid̃ di acr Osberti Aymdesord
Et capit boriat abbatis sinz ꝑdict acr Ecclie Wē ayᵉ Et capit anstid abbatis sinz Wilton Westfelde
• Ste ij. rod j rod ⁊ di iac in ij. quaretenis. ⁊ ꝑ sint forera in vtraq quarentena Et iac ep̃ ꝑte austr terr
de Esthall Et capit orient abbatis sinz terr natiua dñi Epi
• Ste vj rod j. ij rod ⁊ di iac in ij. quarentenis. ep̃ ꝑte orient vj rod de Esthall. ⁊ ep̃ ꝑte ocid̃ vj rod
willm Edward. Et capit anstid abbatis sinz Wilton Westfeld
• Ste di acr. ⁊ iac ep̃ ꝑte anstid j rod terr natiue dñi Epi. ⁊ ep̃ ꝑte boriat ij. rod ayomalin de Chetford
Et capit ocid̃ abbatis sinz Cayneydyles Sevedlond
• Ste ij acr. ⁊ sint forera ad vj acr de Suthhall. ⁊ abbatis sinz vj acr de Suthhall. q̃ boria
• Ste ij acr iac in Wdmesdmesdo ep orient ꝑte vj acrar de Suthhall Et capit boriat abbatis sinz ij rod
de Villmay ayner de Suthhall
• Ste j acr vocatt Crofted acr. ⁊ iac ep̃ ꝑte ocid̃ di acr terr quonda Norreys. ⁊ ep̃ ꝑte orient di acr Osberti
Aymdesord quondam Hodges Et abbatis sinz terr Ecclie Sancti Nichi
• Ste di acr. ⁊ iac ep̃ ꝑte orient di acr abbatis de Wendelyng ⁊ ep̃ ꝑte ocid̃ ij rod de Esthall. Et abbatis sinz
ij acr de Esthall q̃ boria Et sinz de Villmay dñi Epi vocat Whitysholde
• Ste j rod ⁊ di. ⁊ iac ep̃ ꝑte ocid̃ j rod ⁊ di Joh Ayathin. ⁊ ep̃ ꝑte orient Et capit anstid
abbatis sinz Wilton Lytyll Westfeld Et sinz forera quonda Salvters q̃ boria.
• Ste ij. acr ⁊ sint forera. ⁊ iac mꝑ terr Et capit orient abbatis sinz j acr vocatt
Skatchyd acr
• Ste j acr. ⁊ iac ep̃ ꝑte boriat terr de Villmay dñi Epi. Et capit ocid̃ abbatis sinz ꝑdict ij. acr
Et capit orient abbatis sinz Holleweye
• Ste ij. acr. ⁊ iac mꝑ terr Joh Ayathen ep̃ vtraq ꝑte Et abbatis sinz Suthhall langelondes cont orient
Et sinz ij. acr de Esthall q̃ ocid̃
• Ste di acr. ⁊ iac ep̃ ꝑte boriat terr Ecclie de Hobbeholde. ⁊ ep̃ ꝑte anstid terr quondam Skykays. Et capit
orient abbatis sinz predict langelondes
• Ste j acr in eadm quarentena. ⁊ iac mꝑ terr Osberti Aymdesord ep̃ ꝑte

Suthmylsame • Ibidm j rod ⁊ di rod. ⁊ m ꝑte ocid̃ ville Et iac ep̃ ꝑte austr terr quondam Norreys. ⁊ ep̃ ꝑte boriat ij. acrar de terr
Capeyes. Et abbatis sinz ayolendm Abbatis de Wendelyng q̃ orient. Et sinz terr Capeyes q̃ ocid̃
• Ste di acr Et iac mꝑ terr de Villmay Suthhall ep̃ ꝑte Et abbatis sinz ꝑdict q̃ boria
• Ste j acr. ⁊ sint orient ville Et iac ep̃ ꝑte ocid̃ ij rod Hā Gylon ⁊ ep̃ ꝑte orient terr Joh Ayathyn
Et capit boriat abbatis sinz via regia & sinz j acr & di mꝑ chyd̃ quod remd ꝑ ꝑpiu q̃ anstrū.

Mar de Southfelde j rod & di int viam rod & di & rocksteps ep̃ ꝑte & abbattar
sinz limit abbis q̃ ad orient /.

Northmanneco [illegible] gnagg vob Et capit orient abbatt sing & [illegible] ac & Johi hy m pte bor vna Dmsa Et m parte
dnstr terr aymeri de Estsall
Ite j ac abbatt sing oppelondlondt gt boria & sing terr de villmag dm Epi gt unsthm Et iac ex pte
orth terr ayomalm de thetford & ex pte orient
Item ac iac mt terr gnoda Colvteshal ex vtragg pro Et abbatt sing alia cohibar dce ayare gt unsthm

Gin pti m ac & prod

Pratta

Apud le hetehorse m anykolberth j ac & abbatt sing j ac terr arabil dict Ettie
Ite m eod campo vi ac & iac ex pte dnstr pti de Gnthyall & ex pte bor pti dabbt de Wendehyng
In Gnthyelo m rod que abbatt sing m rod terr empt Ettie que mt terr ipig capi in hoc terrario
pmo retribulantur

Gin pti m ac & prod

Et de vij acr terr [illegible] Stalrudyng [illegible] abutt sup [illegible] Johis [illegible] pte boriali [illegible] abbutt
sup terr Prioris de Bromehill [illegible] austr Et [illegible] Crofte ex pte [illegible]
et caput boriale abbutt sup terr Bachecrofte Et [illegible] abbutt sup [illegible] austr ob
Et de iij rod [illegible] Roberti Violette [illegible] ex pte orient terr [illegible] sup dict' [illegible] caput boriale abbutt sup
terras Abbatis de Wendelyng [illegible]

De reddit' supradict' [illegible] die vendacionis [illegible] reddit' [illegible] negligencia
[illegible] tradit' oblivioni [illegible] nisi [illegible] inquisicione [illegible]

A
GEOMETRICALL
EXTRACTION
1684